GROUP 55B

AUTOMATIC AIR CONDITIONER

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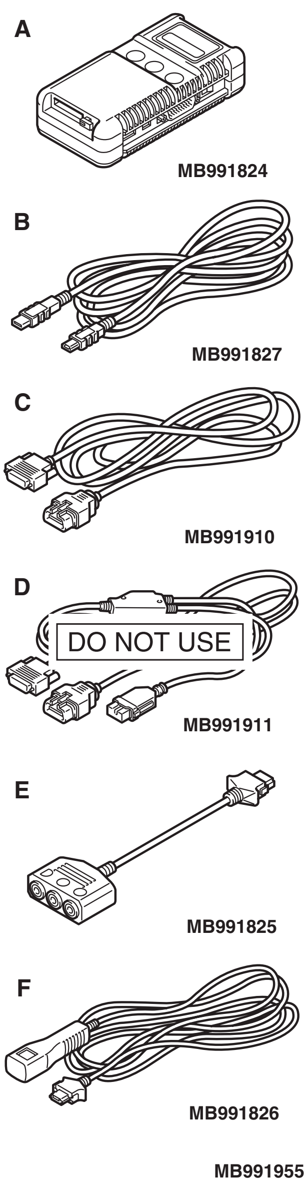
SERVICE SPECIFICATIONS

M1554000300243

Item		Standard value
Idle speed r/min (N or P range)		750 ± 50
Idle-up speed r/min (N or P range)		850 ± 100
Resistance value for air mixing damper control motor and potentiometer kΩ	MAX HOT	Approximately 1.20
	MAX COOL	Approximately 4.80
Resistance value for power transistor kΩ		Approximately 11

SPECIAL TOOL

M1555000600139

Tool	Number	Name	Use
	MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826	M.U.T.-III sub-assembly a. Vehicle Communication Interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III measure adapter f. M.U.T.-III Trigger harness	Check the air conditioner (The M.U.T.-III DTCs display, service data display and actuator test) ⚠ CAUTION **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.**

TROUBLESHOOTING

DIAGNOSIS TROUBLESHOOTING FLOW

M1554004700500

Refer to GROUP 00, Comtents Troubleshooting/Inspection Service Points P.00-5.

DIAGNOSIS FUNCTION

M1554004800477

HOW TO READ DIAGNOSIS CODE

Connect the M.U.T.-III to the 16-pin diagnosis connector to read diagnosis code (Refer to GROUP 00, Diagnosis Function P.00-7).

HOW TO ERASE DIAGNOSIS CODE

Refer to GROUP 00, Diagnosis Function P.00-7.

DIAGNOSIS CODE CHART

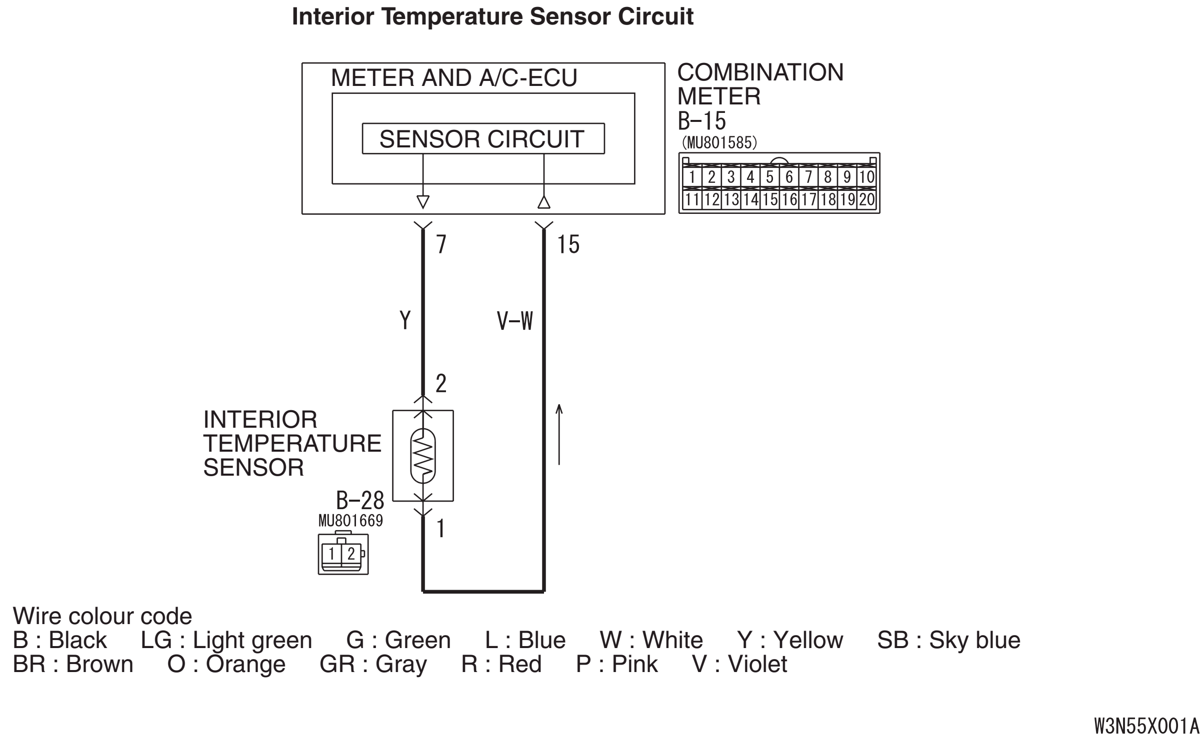
M1554004900753

Code No.	Diagnostic item	Reference page	Service data display contents when diagnosis code is set
B1001	Interior temperature sensor system (short circuit)	P.55B-4	25°C
B1002	Interior temperature sensor system (open circuit)		
B1041	Potentiometer system for the air mix damper (short to power supply)	P.55B-6	Moved to MAX COOL position
B1042	Potentiometer system for the air mix damper (short to earth or open circuit)		
B1045	Motor drive system for the air mix damper	P.55B-8	–
B1081	Communication error with control parts	P.55B-10	–
B1011	Ambient temperature sensor system (short circuit)	Refer to GROUP 55A, DIAGNOSIS CODE CHART P.55A-5	
B1012	Ambient temperature sensor system (open circuit)		
B1021	Air thermo sensor system (short circuit)		
B1022	Air thermo sensor system (open circuit)		
B1082	Automatic/manual types abnormal error		
U1073	Bus off error	Refer to GROUP 54A, COMBINATIO N METER P.54A-31	–
U1100	Engine-ECU time-out		
U1101			
U1102	ABS-ECU time-out		
U1106	EPS-ECU time-out		
U1109	ETACS-ECU time-out		
U1120	Failure information on engine-ECU (related to engine)		

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DIAGNOSTIC TROUBLE CODE PROCEDURES

Code No.B1001,B1002: Interior temperature sensor system



DIAGNOSIS CODE SET CONDITION

This code is set when the interior temperature sensor circuit is open (Code No.B1002) or is short (Code No.B1001).

POSSIBLE CAUSES

- Malfunction of the interior temperature sensor
- Damaged the wiring harness or connectors
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III data list

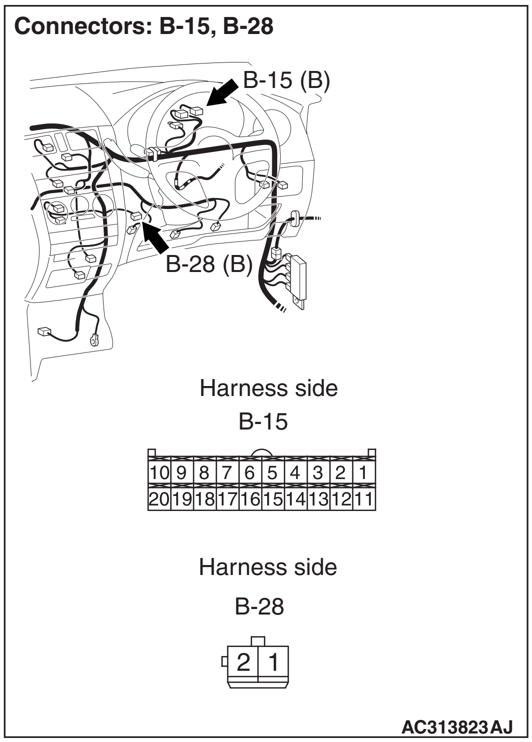
Check that the following service data display contents are normal. (Refer to P.55B-24).

- Item 01: Inside temperature sensor

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 2.

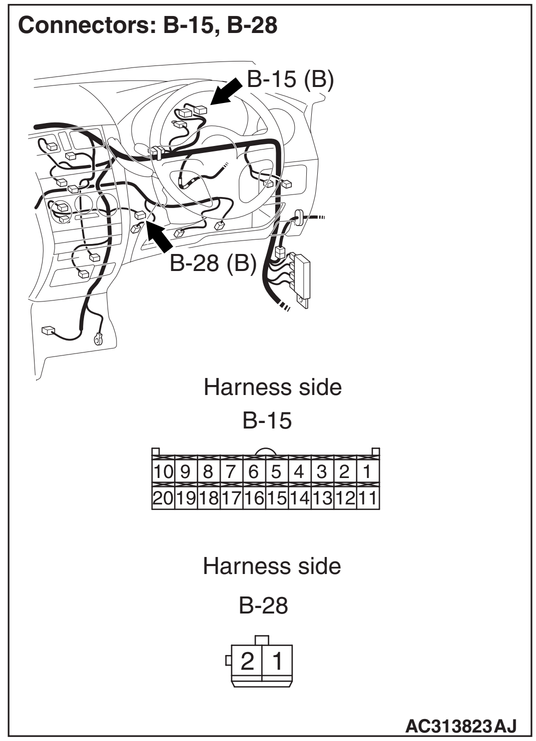
Step 2. Connector check: B-15 combination meter connector and B-28 interior temperature sensor connector



Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the connector.

Step 3. Check the wiring harness between B-15 combination meter connector (terminals 7 and 15) and B-28 interior temperature sensor connector (terminals 2 and 1).



- Check the sensor signal line and earth line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the wiring harness.

Step 4. Check the interior temperature sensor.

Refer to P.55B-34.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the interior temperature sensor.

Step 5. Check whether the diagnosis code is reset.

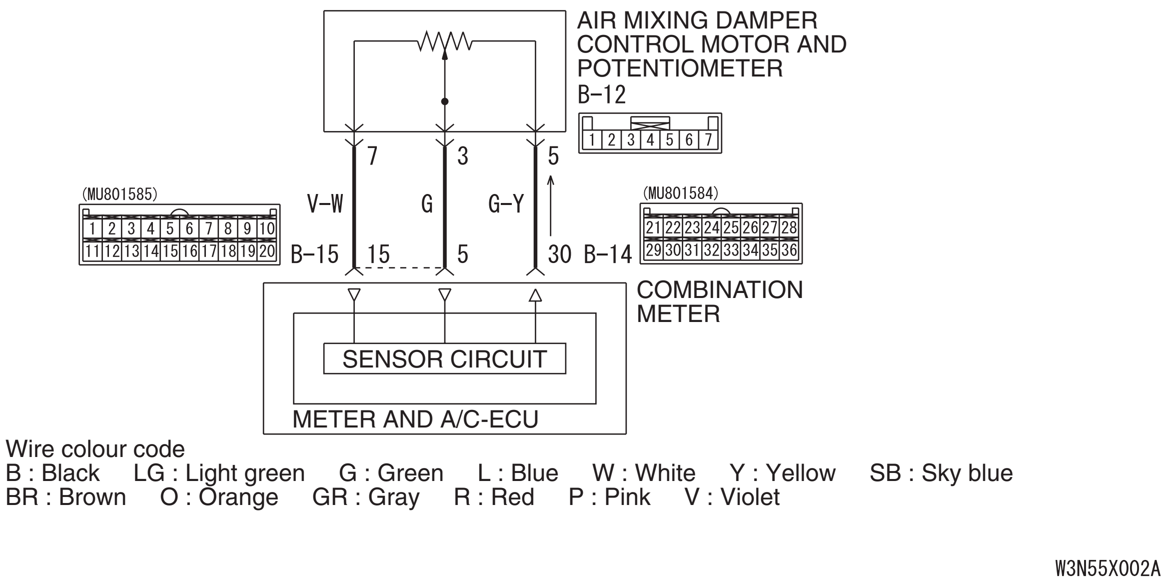
Q: Is the diagnosis code set?

YES : Replace the combination meter (meter and A/C-ECU).
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

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Code No.B1041,B1042: Potentiometer system for the air mix damper

Air Mixing Damper Control Motor And Potentiometer Circuit



DIAGNOSIS CODE SET CONDITION

This code is set when the air mixing damper control motor potentiometer does not send any signal to the A/C-ECU due to short or open circuit.

POSSIBLE CAUSES

- Malfunction of the air mixing damper control motor and potentiometer
- Damaged the wiring harness or connectors
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III data list

Check that the following service data display contents are normal. (Refer to P.55B-24).

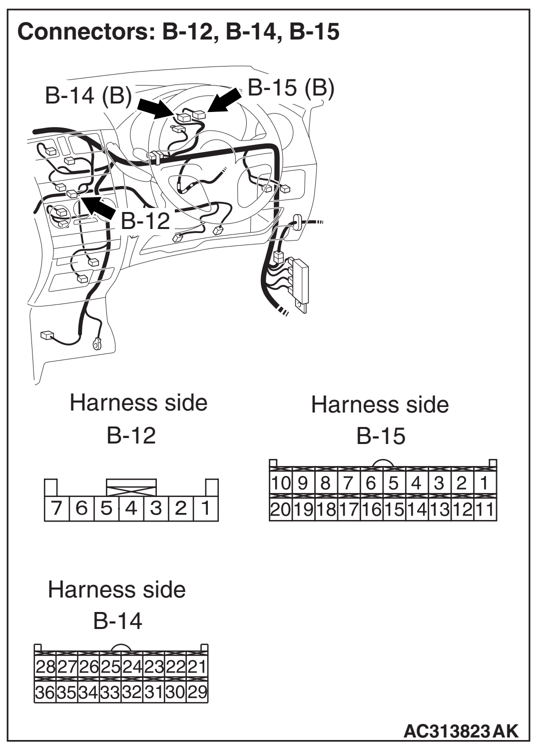
- Item 10: Air mix potentiometer
- Item 11: Air mix potentiometer (Target)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 2.

Step 2. Connector check: B-14 and B-15 combination meter connector and B-12 air mixing damper control motor and potentiometer connector



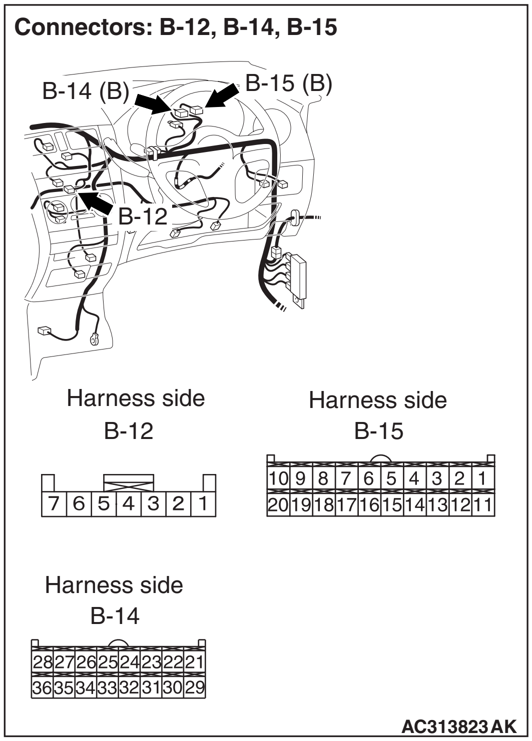
Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector.

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Step 3. Check the wiring harness between B-14 and B-15 combination meter connector (terminals 15, 5 and 30) and B-12 air mixing damper control motor and potentiometer connector (terminals 7, 3 and 5).



- Check the potentiometer power supply, earth and signal line for open or short circuit.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the wiring harness.

Step 4. Check the air mixing damper control motor and potentiometer.
Refer to P.55B-34.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Replace the air mixing damper control motor and potentiometer.

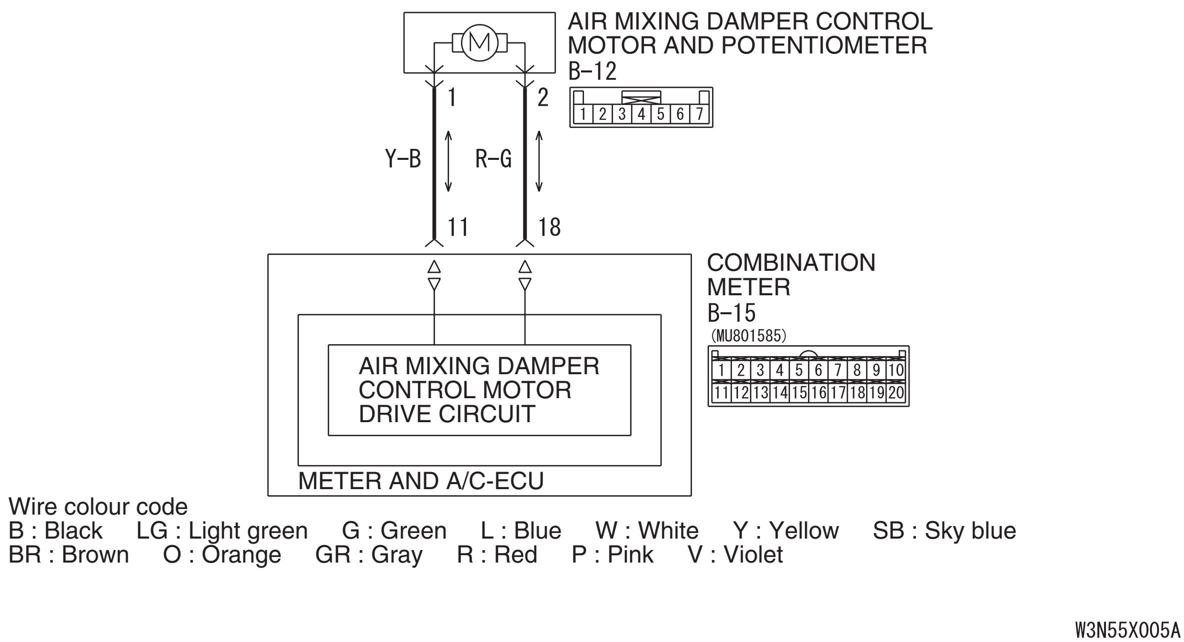
Step 5. Check whether the diagnosis code is reset.

Q: Is the diagnosis code set?
YES : Replace the combination meter (meter and A/C-ECU).
NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

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Code No.B1045: Motor drive system for the air mix damper

Air Mix Damper Control Motor And Potentiometer Circuit



DIAGNOSIS CODE SET CONDITION

This code is set when the air mixing damper cannot be rotated to the preset opening angle.

POSSIBLE CAUSES

- Malfunction of the air mixing damper control motor and potentiometer
- Malfunction of the combination meter (meter and A/C-ECU)
- Damaged the wiring harness or connectors

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III actuator test

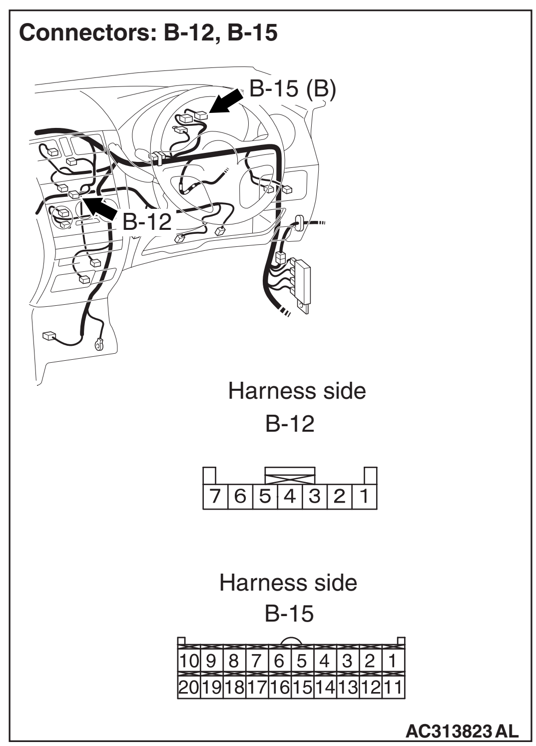
Check that the following actuator test can be executed normally. (Refer to P.55B-25)

- Item 10: Air mix dumper motor: 0%
- Item 11: Air mix dumper motor: 50%
- Item 12: Air mix dumper motor: 100%

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 2.

Step 2. Connector check: B-15 combination meter connector and B-12 air mixing damper control motor and potentiometer connector



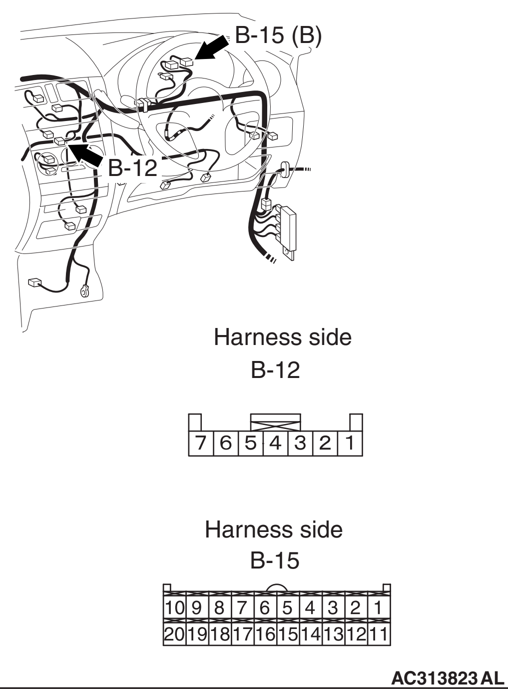
Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the connector.

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Step 3. Check the wiring harness between B-15 combination meter connector (terminals 11 and 18) and B-12 air mixing damper control motor and potentiometer connector (terminals 1 and 2).

Connectors: B-12, B-15



- Check the motor activating lines for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the wiring harness.

Step 4. Check the air mixing damper control motor and potentiometer.

Refer to P.55B-34.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the air mixing damper control motor and potentiometer.

Step 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Ignition switch: LOCK (OFF) position to ON

(2) Erase the diagnosis code.

(3) Turn the temperature adjusting knob to MAX COOL for 16 seconds, and then turn to MAX HOT for 16 seconds.

(4) Check if the diagnosis code is set.

Q: Is the diagnosis code set?

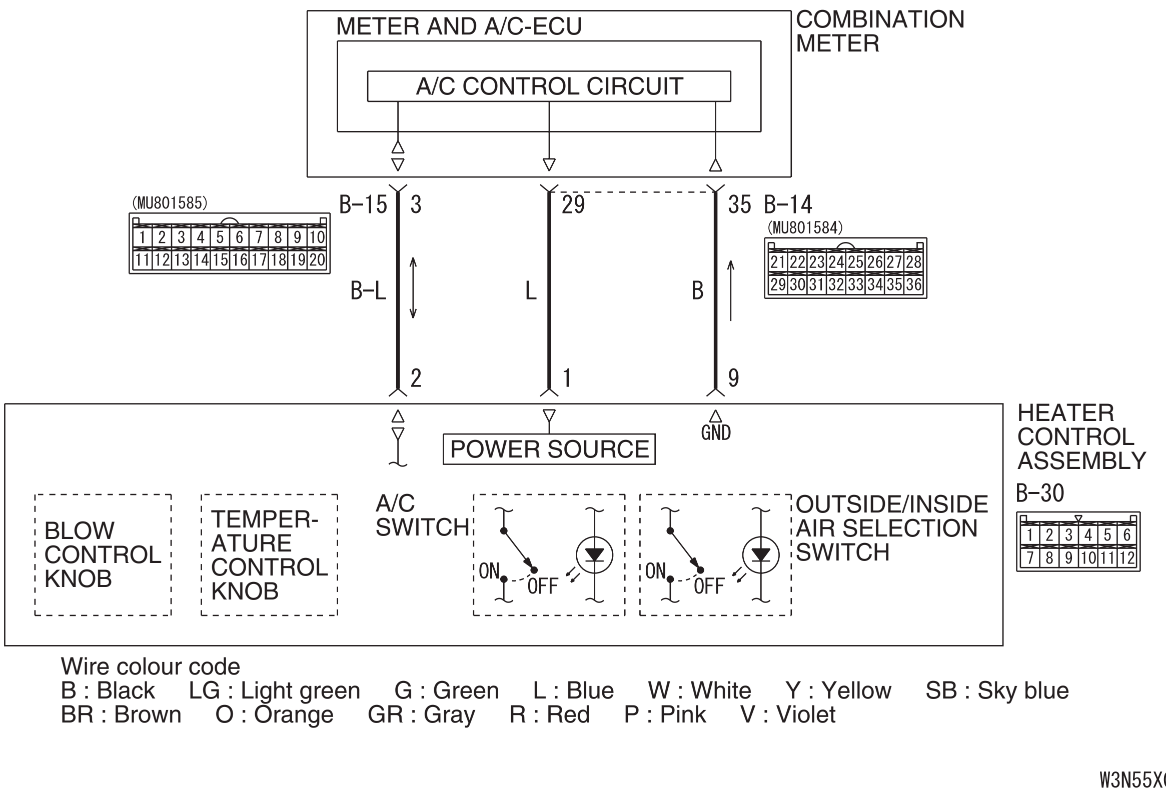
YES : Replace the combination meter (meter and A/C-ECU).

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

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Code No.B1081 Communication error with control parts

Combination Meter and Heater Control Assembly Circuit



DIAGNOSIS CODE SET CONDITION

This diagnosis code is set when the combination meter (meter and A/C-ECU) can not receive the data from the heater control.

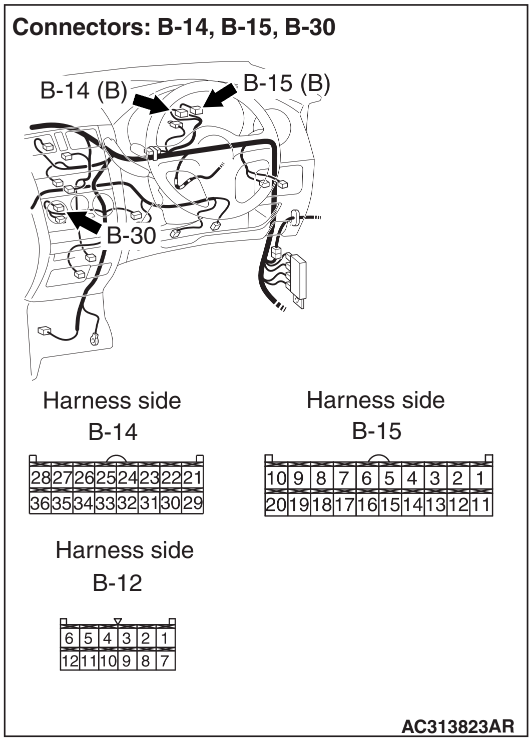
POSSIBLE CAUSES

- Malfunction of the heater control assembly
- Damaged the wiring harness or connectors
- Malfunction of the combination meter (meter and A/C-ECU)

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DIAGNOSIS PROCEDURE

Step 1. Connector check: B-14, B-15 combination meter connector and B-30 heater control assembly connector

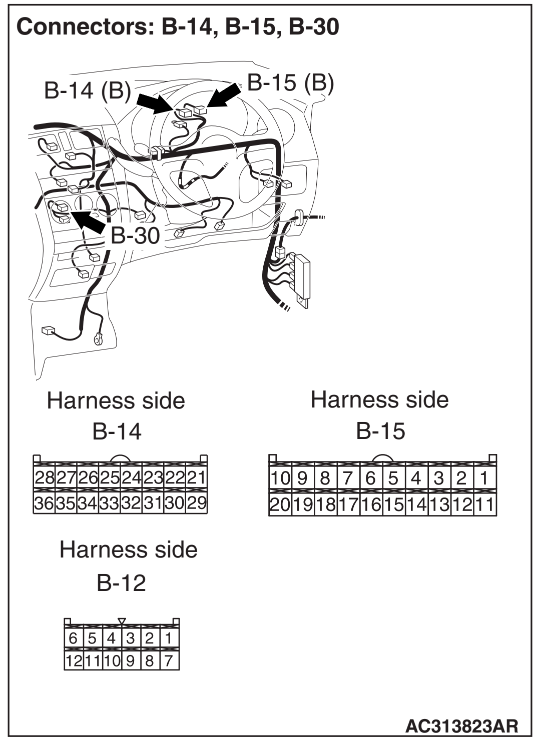


Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the connector.

Step 2. Check the wiring harness between B-14, B-15 combination meter connector (terminals 3, 29 and 35) and B-30 heater control assembly (terminals 2, 1 and 9).



- Check the heater control signal line and earth line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the wiring harness.

Step 3. Check whether the diagnosis code is reset.

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

Step 4. Replace the heater control assembly and recheck the trouble symptom

Q: Is the check result normal?

YES : This diagnosis is complete.

NO : Replace the combination meter (meter and A/C-ECU).

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TROUBLE SYMPTOM CHART

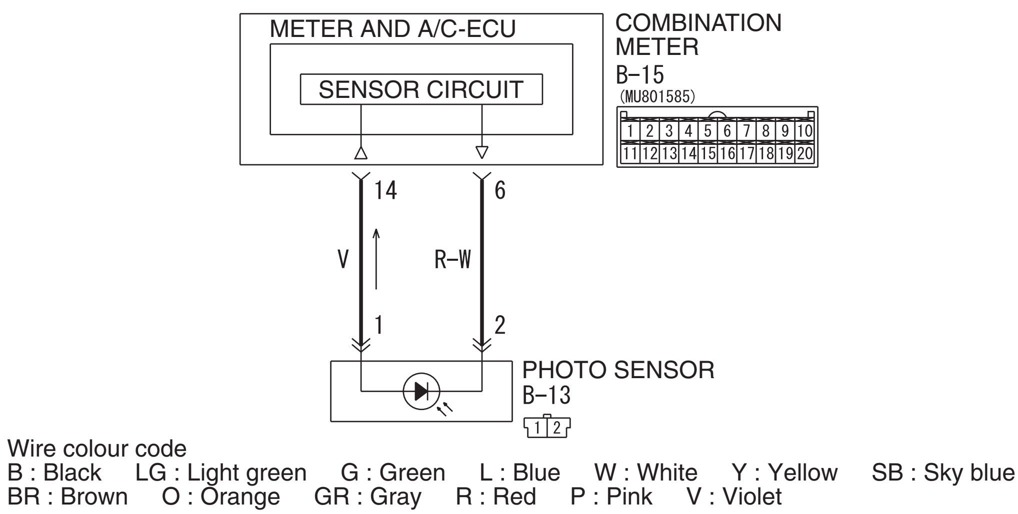
M1554005000838

Trouble symptom	Inspection procedure number	Reference page
The outlet air temperature can not be changed even if the amount of solar radiation changes	1	P.55B-12
The blower does not work	2	P.55B-14
The blower air volume cannot be changed	3	P.55B-21

SYMPTOM PROCEDURES

Inspection Procedure 1: The outlet air temperature can not be changed even if the amount of solar radiation changes

Photo Sensor Circuit



W3N55X003A

CIRCUIT OPERATION

When the blower air temperature can not be changed even if the amount of solar radiation is changed, the photo sensor may be defective.

POSSIBLE CAUSES

- Malfunction of photo sensor
- Damaged harness wires and connectors
- Malfunction of the combination meter (meter and A/C-ECU)

DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III diagnosis code.

Check whether the air conditioner sets a diagnosis code or not.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Refer to diagnosis code chart P.55B-3.

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Step 2. M.U.T.-III data list.

Check that the following service data display contents are normal. (Refer to P.55B-24).

- Item 06: Photo sensor

Q: Is the check result normal?

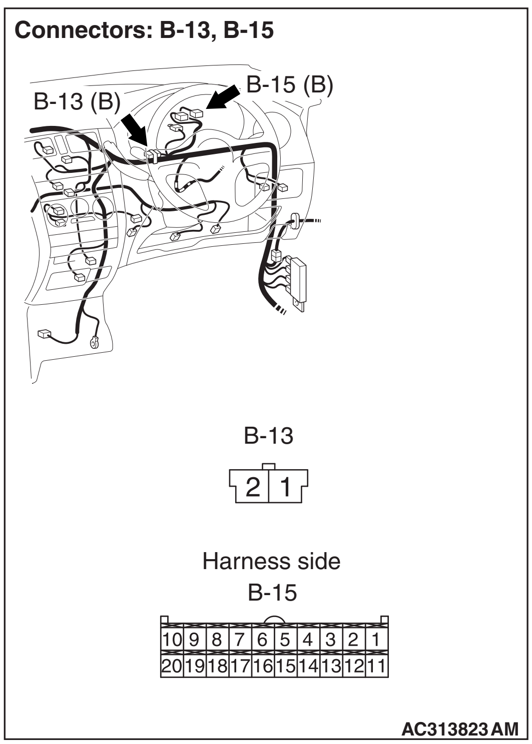
YES : Go to Step 3.
NO : Go to Step 4.

Step 3. Recheck the trouble symptom

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Replace the combination meter (meter and A/C-ECU).

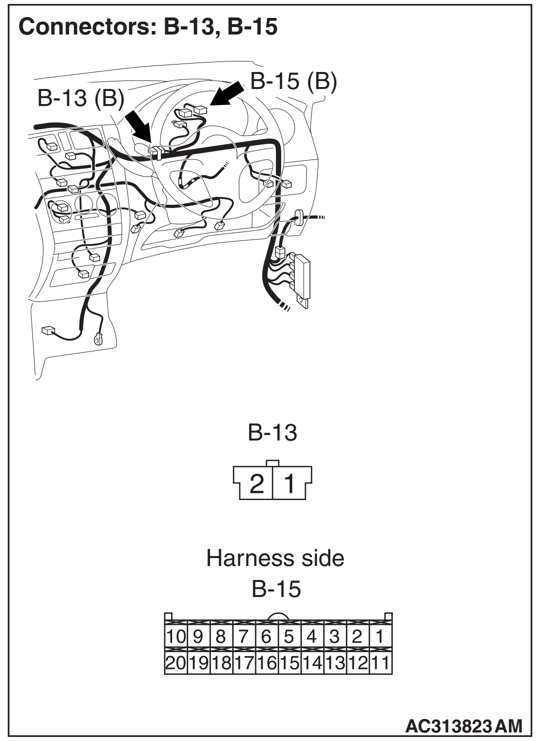
Step 4. Connector check: B-13 photo sensor connector and B-15 combination meter connector



Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the connector.

Step 5. Check the wiring harness between B-13 photo sensor connector (terminal 1 and 2) and B-15 combination meter connector (terminal 14 and 6).



- Check the A/C compressor relay power supply line for open circuit.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair the wiring harness. Check that the air conditioner works normally.

Step 6. Replace the photo sensor and recheck the trouble symptom

Check that the air conditioner works normally.

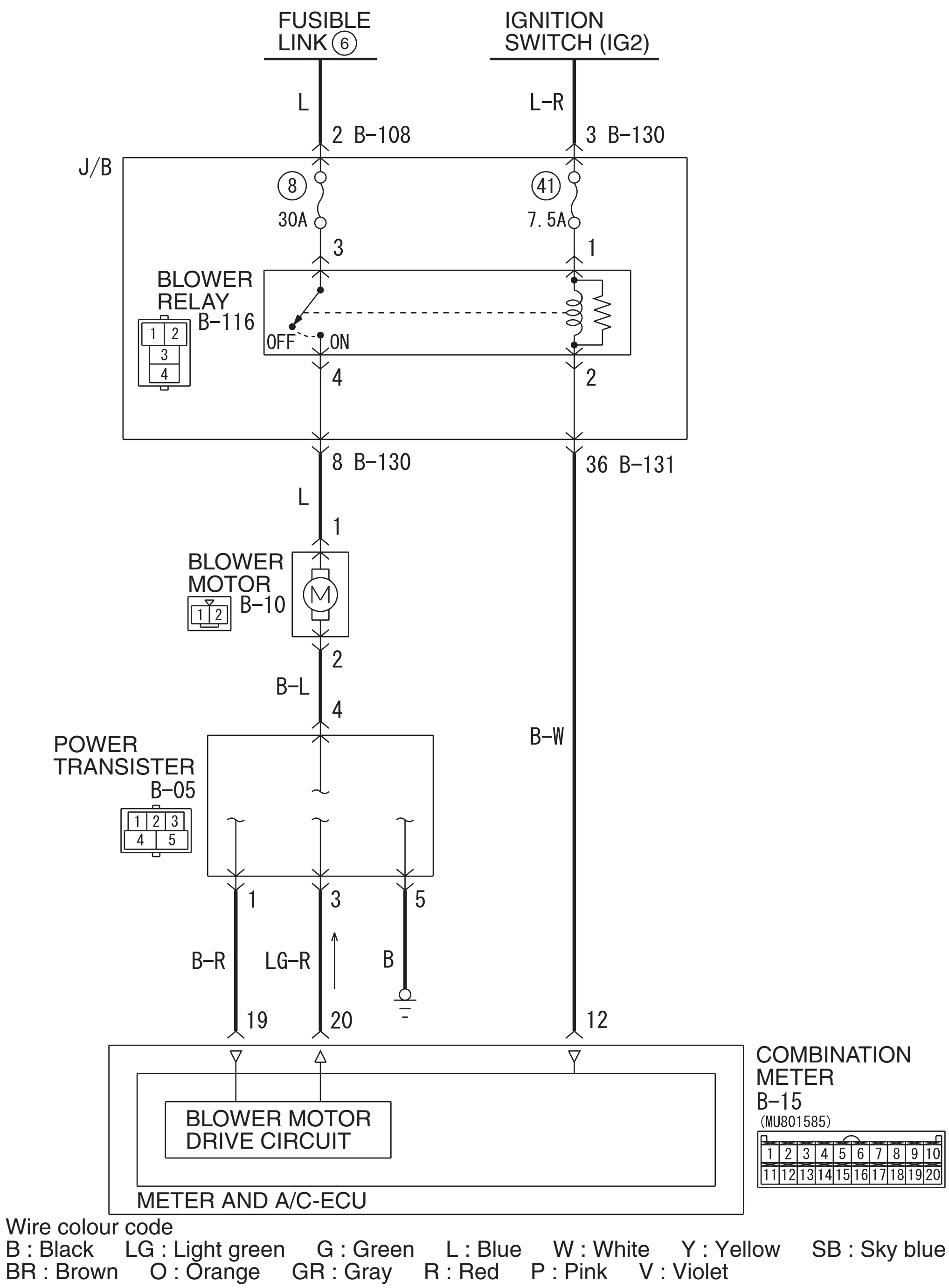
Q: Is the check result normal?

YES : This diagnosis is complete.
NO : Replace the combination meter (meter and A/C-ECU).

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Inspection Procedure 2: The blower does not work

Blower Motor Circuit



COMMENTS ON TROUBLE SYMPTOM

If the blower motor does not operate, the blower motor circuit system may be defective.

POSSIBLE CAUSES

- Malfunction of the blower motor.
- Malfunction of the power transistor.
- Malfunction of the combination meter (meter and A/C-ECU)
- Damaged the wiring harness or connectors

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DIAGNOSIS PROCEDURE

Step 1. M.U.T.-III actuator test

Carry out the actuator test. (Refer to P.55B-25)

- Item 01, 02, 03: blower fan

Q: Does the blower motor work normally?

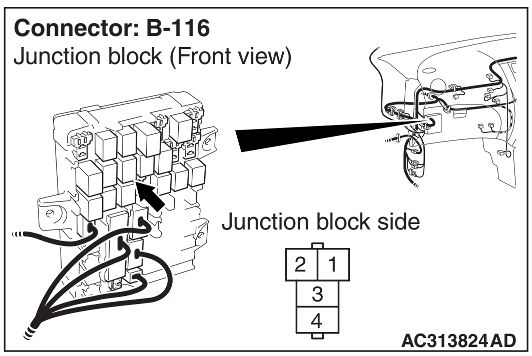
YES : Go to Step 2.
NO : Go to Step 3.

Step 2. Recheck the trouble symptom

Q: Is the check result normal?

YES : Intermittent malfunction (GROUP 00 – How to Cope with Intermittent Malfunction P.00-13).
NO : Go to Step 19.

Step 3. Connector check: B-116 blower relay connector



Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the connector.

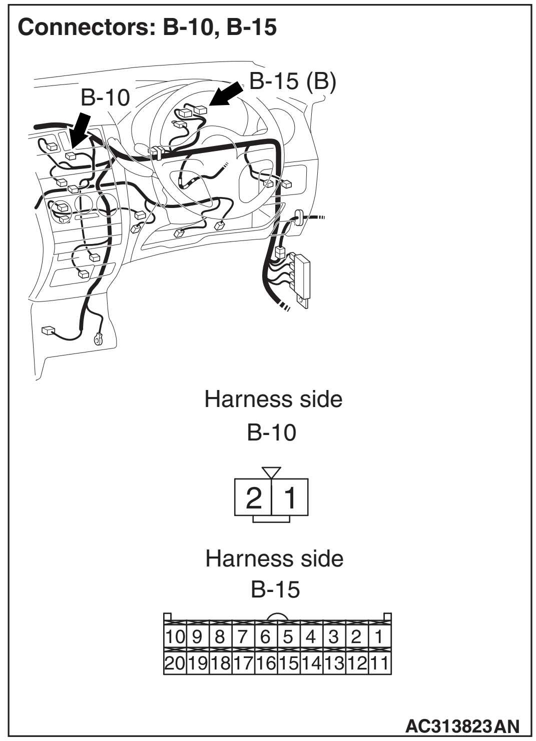
Step 4. Check the blower relay.

Refer to GROUP 55A, On-vehicle Service – Power relay check P.55A-52.

Q: Is the blower relay in good condition?

YES : Go to Step 5.
NO : Replace the blower relay.

Step 5. Connector check: B-10 blower motor connector and B-15 combination meter connector

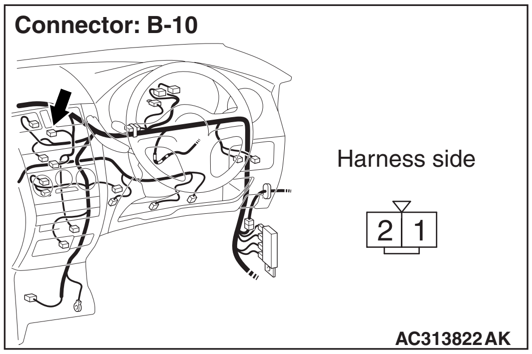


Q: Is the check result normal?

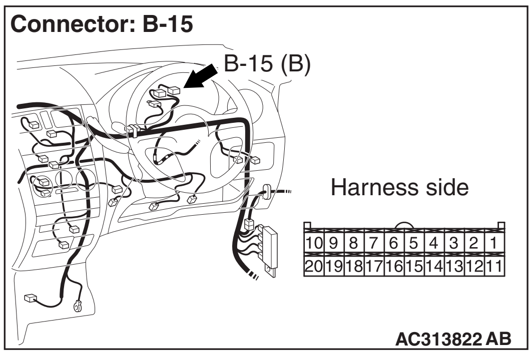
YES : Go to Step 6.
NO : Repair the connector.

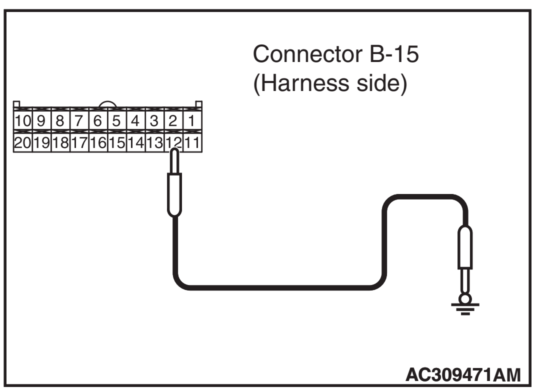
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Step 6. Voltage measurement at the B-10 blower motor controller connector.

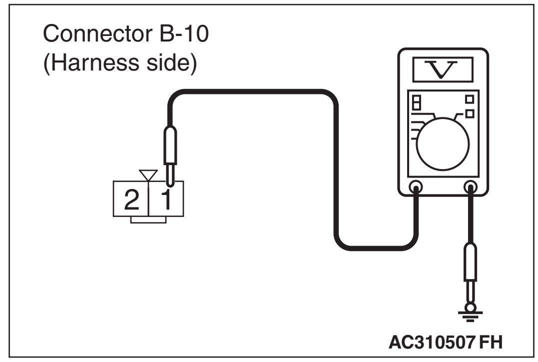


(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the ON position.





(3) Disconnect combination meter connector B-15, and earth terminal 12.

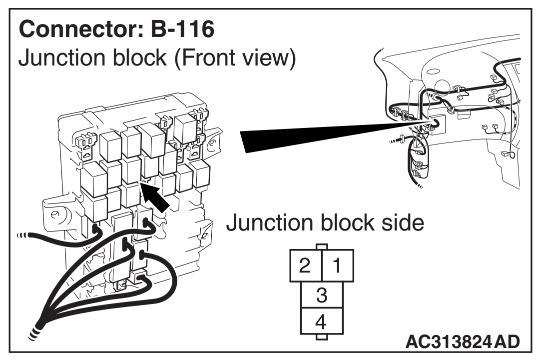


(4) measure the voltage between terminal 1 and body earth.

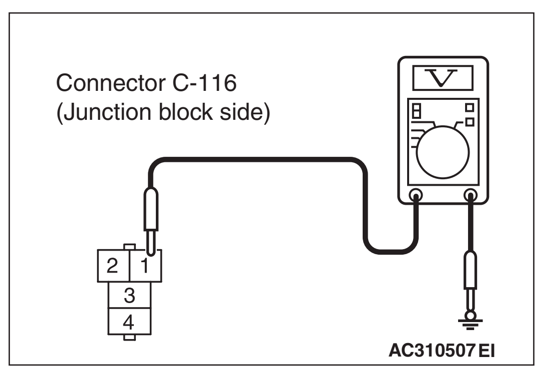
OK: System voltage

Q: Is the check result normal?
YES : Go to Step 13.
NO : Go to Step 7.

Step 7. Voltage measurement at B-116 blower relay connector.



(1) Remove the relay, and measure at the junction block side.
(2) Turn the ignition switch to the ON position.

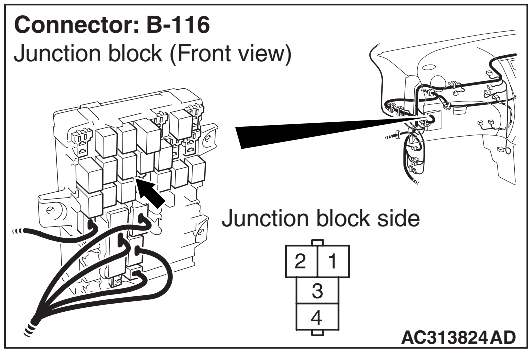


(3) Voltage between terminal 1 and body earth.

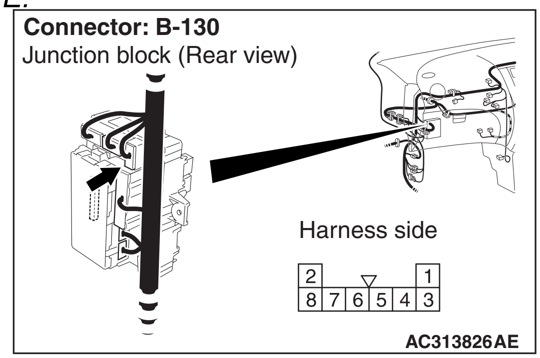
OK: System voltage

Q: Is the check result normal?
YES : Go to Step 9.
NO : Go to Step 8.

Step 8. Check the wiring harness between B-116 blower relay connector terminal No.1 and the ignition switch (IG2).



NOTE:



Prior to the wiring harness inspection, check junction block connector B-130, and repair if necessary.

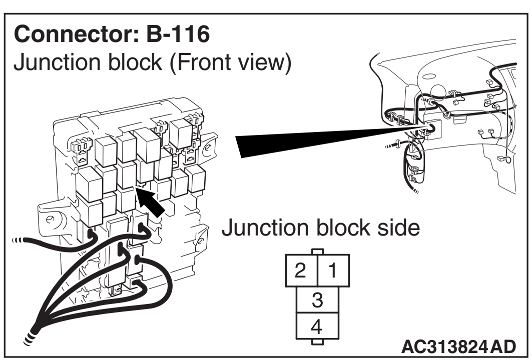
- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?

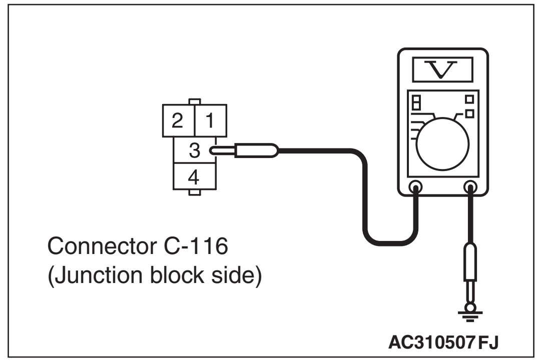
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the wiring harness.

Step 9. Voltage measurement at B-116 blower relay connector.



(1) Remove the relay, and measure at the junction block side.



(2) Voltage between terminal 3 and body earth.

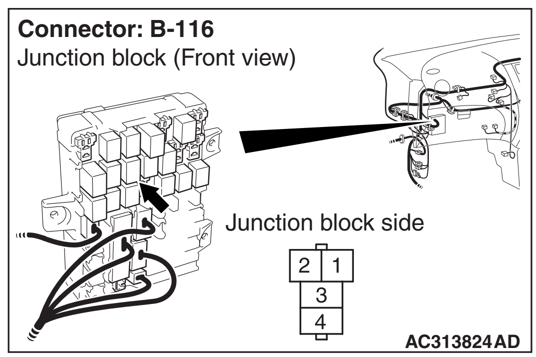
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 11.

NO : Go to Step 10.

Step 10. Check the wiring harness between B-116 blower relay connector terminal No.3 and fusible link (6).



NOTE: Prior to the wiring harness inspection, check junction block connector B-116, and repair if necessary.

- Check the blower relay power supply line for open circuit.

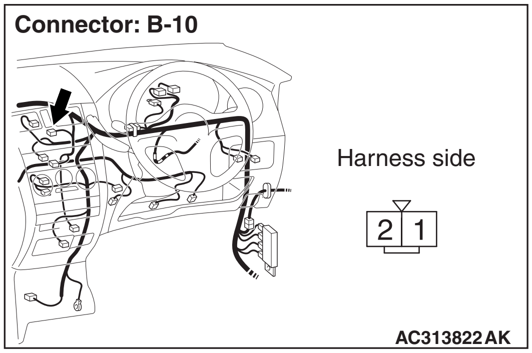
Q: Is the check result normal?

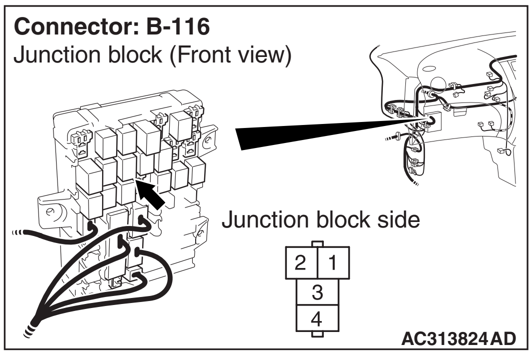
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the wiring harness.

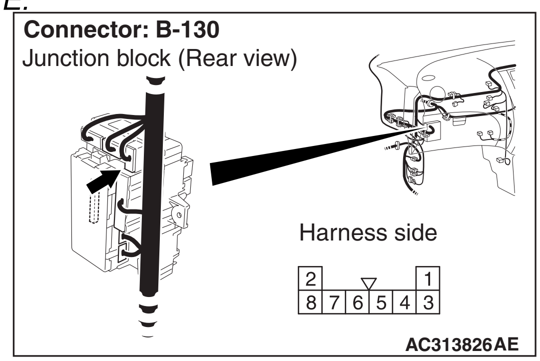
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Step 11. Check the wiring harness between B-116 blower relay connector terminal No.4 and B-10 blower motor connector terminal No.1.





NOTE:



Prior to the wiring harness inspection, check junction block connector B-130, and repair if necessary.

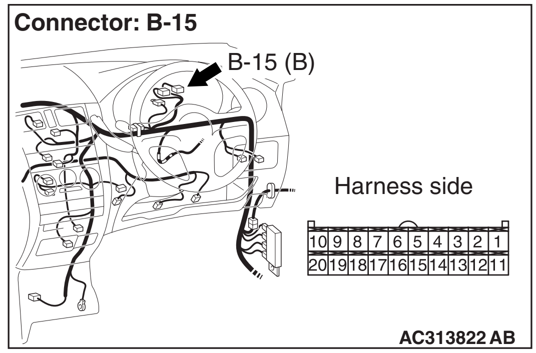
- Check the blower relay earth wires for open circuit.

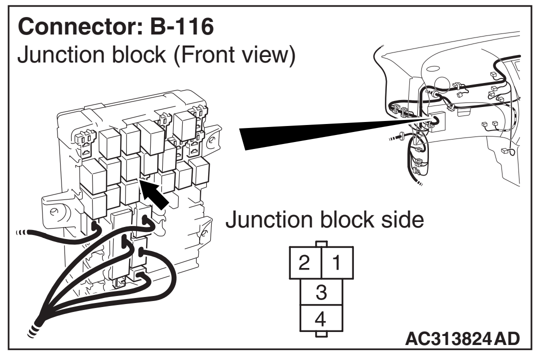
Q: Is the check result normal?

YES : Go to Step 12.

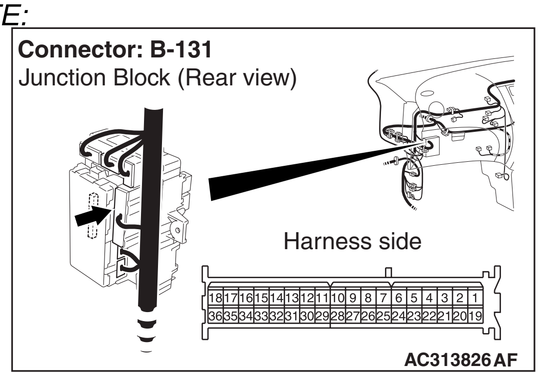
NO : Repair the wiring harness.

Step 12. Check the wiring harness between B-116 blower relay connector terminal No.2 and B-15 combination meter connector terminal No.12.





NOTE:



Prior to the wiring harness inspection, check junction block connector B-131, and repair if necessary.

- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Repair the wiring harness.

Step 13. Check the blower motor

Refer to GROUP 55A P.55A-61.

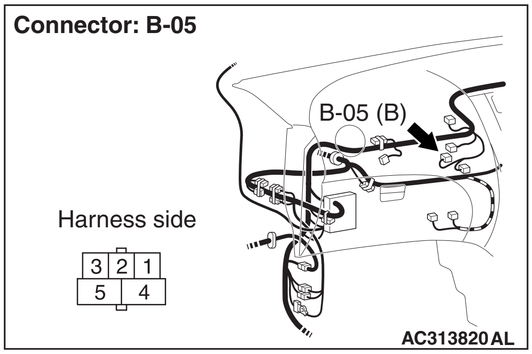
Q: Is the check result normal?

YES : Go to Step 14.

NO : Replace the outside/inside air selection damper control motor.

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Group TOC

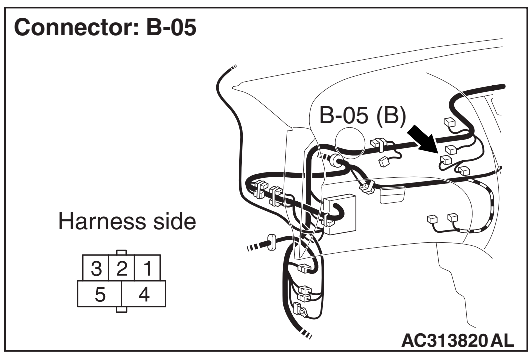
Step 14. Connector check: B-05 power transistor controller connector



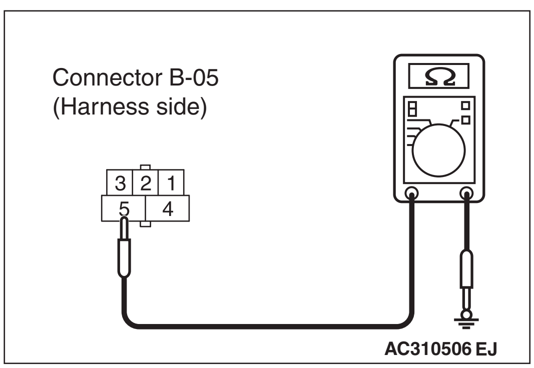
Q: Is the check result normal?

YES : Go to Step 15.
NO : Repair the connector.

Step 15. Resistance measurement at the B-05 power transistor connector.



(1) Disconnect the connector, and measure at the wiring harness side.



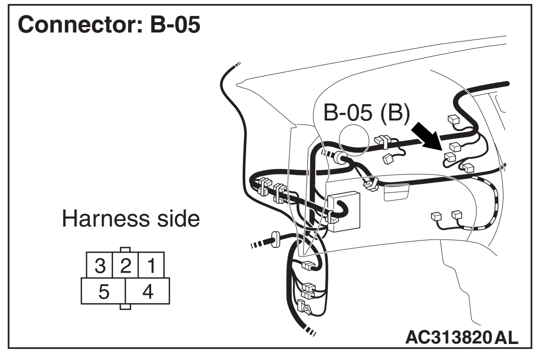
(2) Continuity between terminal 5 and body earth

OK: Continuity (Less than 2 Ω)

Q: Is the check result normal?

YES : Go to Step 17.
NO : Go to Step 16.

Step 16. Check the wiring harness between B-05 power transistor connector terminal No.5 and body earth.

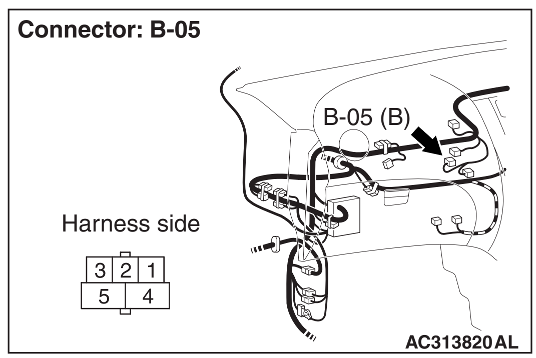


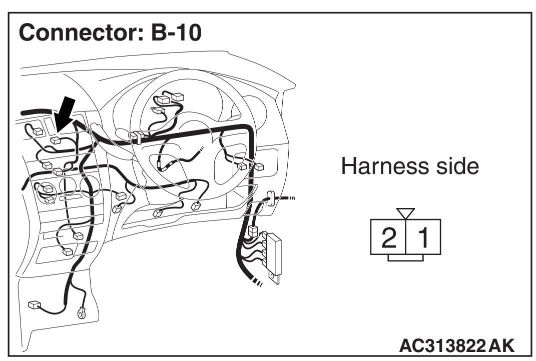
- Check the blower linear controller earth line for open circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Repair the wiring harness.

Step 17. Check the wiring harness between B-10 blower motor connector terminal No.2 and B-05 power transistor controller connector terminal No.4.





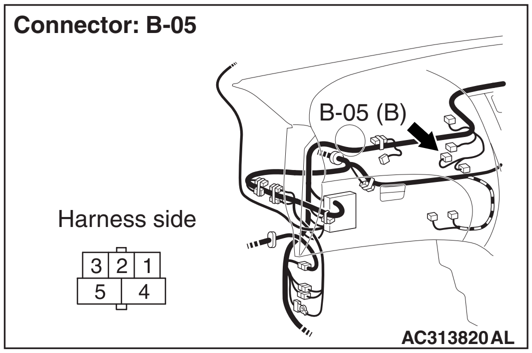
- Check the blower linear controller power supply line for open circuit.

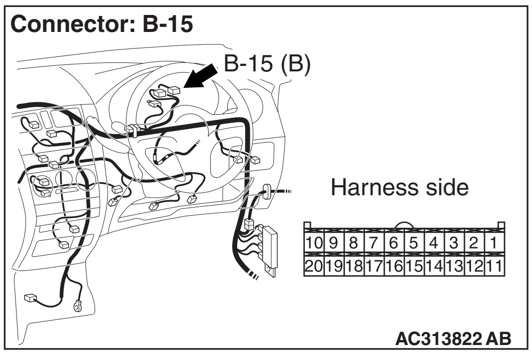
Q: Is the check result normal?

YES : Go to Step 18.
NO : Repair the wiring harness.

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Group TOC

Step 18. Check the wiring harness between B-15 combination meter connector (terminals 19 and 20) and B-05 power transistor controller connector (terminals 1 and 3).





- Check the blower linear controller power supply line for open circuit.

Q: Is the check result normal?
YES : Go to Step 19.
NO : Repair the wiring harness.

Step 19. Replace the power transistor and recheck the trouble symptom

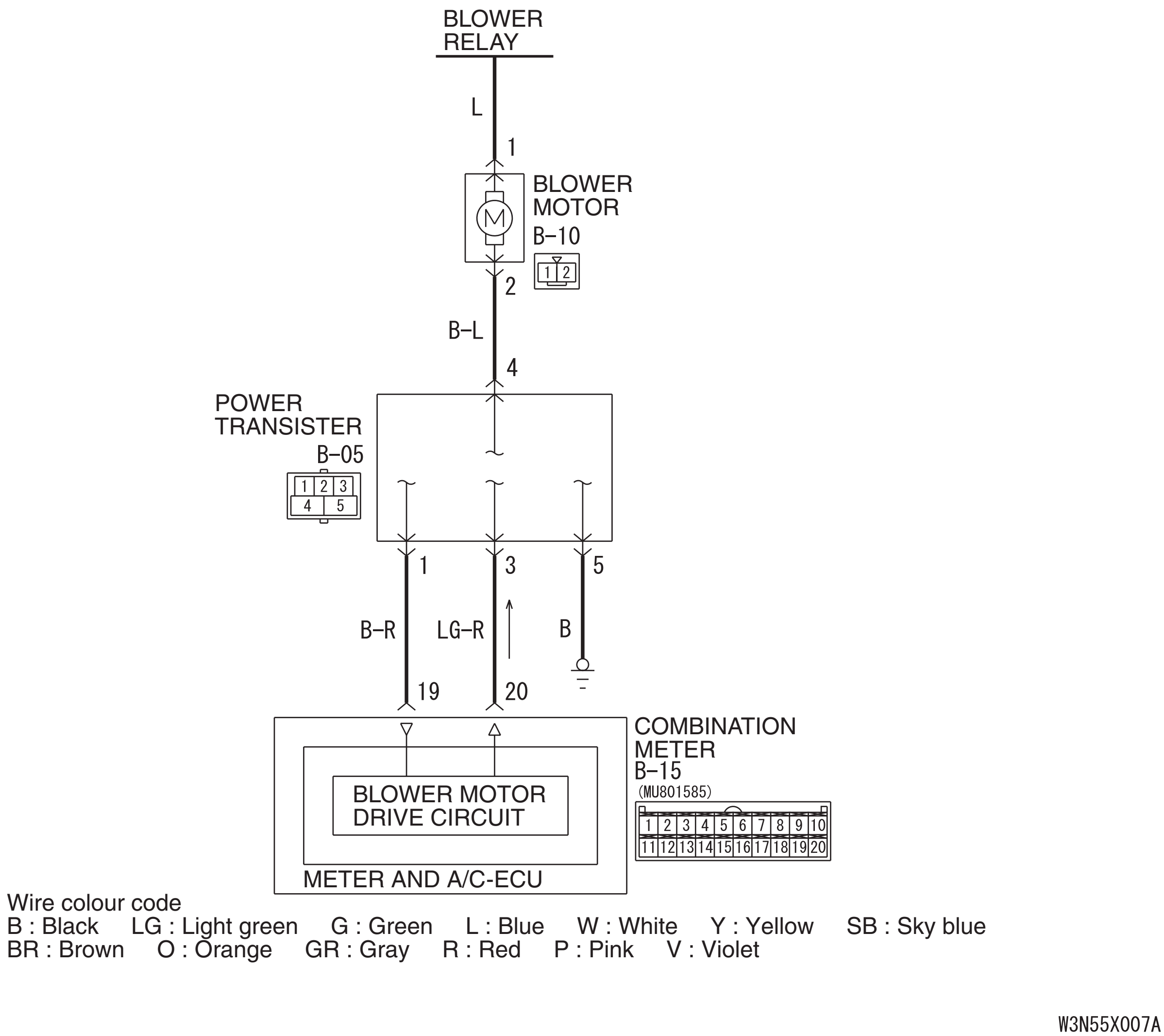
Check that the blower motor operates normally.

Q: Is the check result normal?
YES : This diagnosis is complete.
NO : Replace the combination meter (meter and A/C-ECU).

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Inspection Procedure 3: The blower air volume cannot be changed

Blower Motor Circuit



COMMENTS ON TROUBLE SYMPTOM

If the blower air volume can not be changed when the blower switch is operated, the circuit between power transistor and combination meter (meter and A/C-ECU) may be defective.

POSSIBLE CAUSES

- Front power transistor
- Damaged the wiring harness or connectors
- Malfunction of the combination meter (meter and A/C-ECU)

Step 1. M.U.T.-III actuator test

Carry out the actuator test. (Refer to P.55B-25).

- Item 01, 02, 03: Blower motor

Q: Does the blower motor work normally?

YES : Go to Step 2.
NO : Go to Step 3.

Step 2. Replace the power transistor and check the trouble symptom

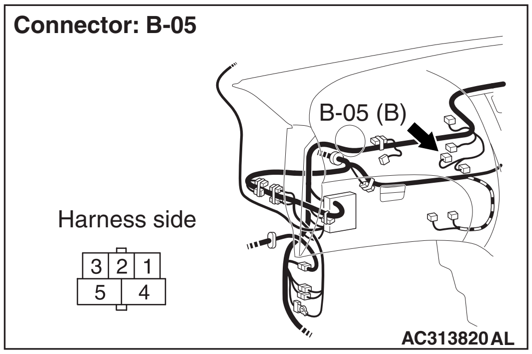
Check that the front blower motor operates normally.

Q: Does the blower motor work normally?

YES : This diagnosis is complete.
NO : Replace the combination meter (meter and A/C-ECU)

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Group TOC

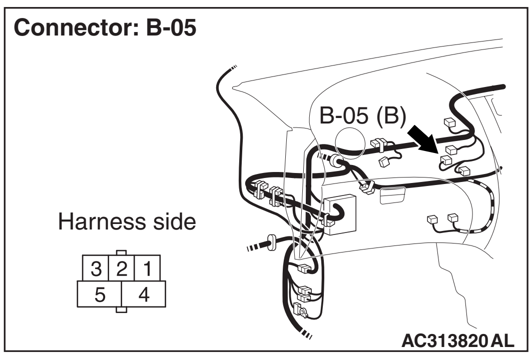
Step 3. Connector check: B-05 power transistor controller connector



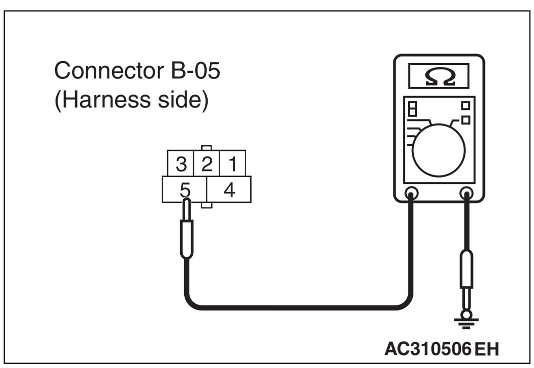
Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the connector.

Step 4. Resistance measurement at the B-05 power transistor connector.



(1) Disconnect the connector, and measure at the wiring harness side.



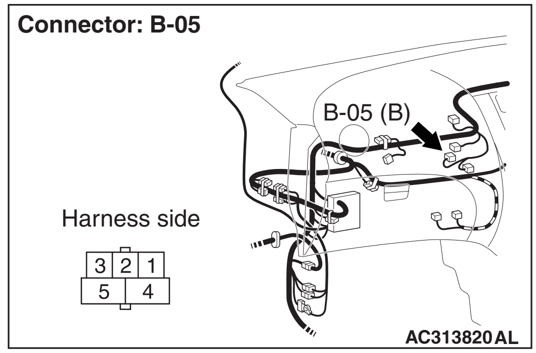
(2) Continuity between terminal 5 and body earth

OK: Continuity (Less than 2 Ω)

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 5.

Step 5. Check the wiring harness between B-05 power transistor connector terminal No.5 and body earth.

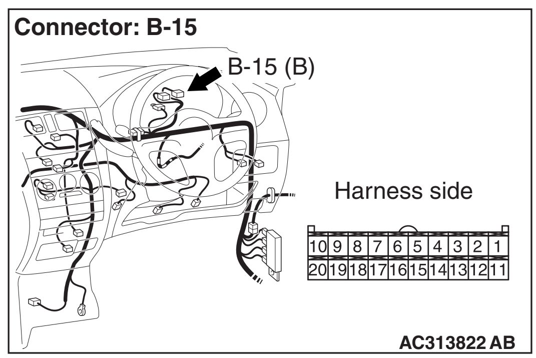


- Check the blower linear controller earth line for open circuit.

Q: Is the check result normal?

YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).
NO : Repair the wiring harness.

Step 6. Connector check: B-15 combination meter controller connector

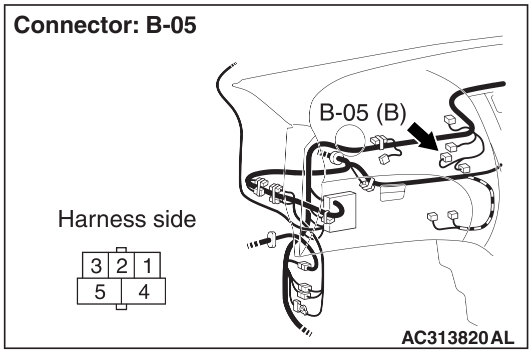


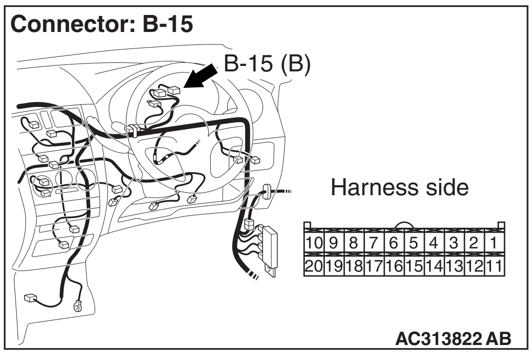
Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the connector.

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Group TOC

Step 7. Check the wiring harness between B-15 combination meter connector (terminals 19 and 20) and B-05 power transistor controller connector (terminals 1 and 3).





- Check the blower linear controller power supply line for open circuit.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the wiring harness.

Step 8. Replace the power transistor and check the trouble symptom

Check that the front blower motor operates normally.

Q: Does the blower motor work normally?

YES : This diagnosis is complete.

NO : Replace the combination meter (meter and A/C-ECU).

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SERVICE DATA REFERENCE TABLE

M1554005100288

Item No.	Check items	Check contents	
01	Interior temperature sensor	Ignition switch: ON	Interior temperature is the same as M.U.T.-III displayed temperature
02	Ambient temperature sensor	Ignition switch: ON	Ambient temperature is the same as M.U.T.-III displayed temperature
03	Air thermo sensor	Ignition switch: ON	Evaporator outlet temperature is the same as M.U.T.-III displayed temperature
04	A/C pressure sensor	Ignition switch: ON	According with the chart for simple inspection of the A/C pressure sensor (Refer to GROUP 55A, On-vehicle Service P.55A-51).
05	Water temperature sensor	Ignition switch: ON	The coolant temperature is the same as M.U.T.-III displayed temperature
06	Photo sensor	Ignition switch: ON Change the volume of insolation.	The amount of solar radiation is indirectly proportional to M.U.T.-III displayed voltage
07	Set temperature	Ignition switch: ON	Displays the set temperarure
08	Set temperature (control part set value)	Ignition switch: ON	Display the control part set temperarure
10	Air mixing damper control motor and potentiometer	Ignition switch: ON Damper position: MAX HOT	Opening angle: 100%
		Ignition switch: ON Damper position: MAX COOL	Opening angle: approximately 0%
11	Air mixing damper control motor and potentiometer (Target)	Ignition switch: ON	Display the target value for air mix damper
15	Outside/Inside air selection damper	Ignition switch: ON	Display the outside/inside air selection damper position
20	Blower motor	Ignition switch: ON	Display the rotation speed of blower motor
21	Blower motor (Target)	Ignition switch: ON	Display the target rotation speed of blower motor
30	A/C switch	Ignition switch: ON	Display the A/C switch status
31	A/C switch (control part set value)	Ignition switch: ON	A/C switch status
35	Rear window defogger switch (control part set value)	Ignition switch: ON	Display the rear window defogger switch status
36	Blower switch	Ignition switch: ON	Display the blower switch status

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Item No.	Check items	Check contents	
37	Outside/Inside air selection switch	Ignition switch: ON	Display the outside/inside air selection switch status
40	Abnormal low pressure judgement	Ignition switch: ON	Displays the abnormal low pressure judgement
41	Refrigerant leaks judgement	Ignition switch: ON	Display the refrigerant leaks judgement
42	DEF position flag	Ignition switch: ON	Display the DEF position flag
43	Forcible DEF position flag	Ignition switch: ON	Display the forcible DEF position flag
44	Forcible DEF DRY flag	Ignition switch: ON	Display the forcible DEF DRY flag
45	MAX COOL DRY flag	Ignition switch: ON	MAX COOL DRY flag status
46	MAX COOL recirculation flag	Ignition switch: ON	Display the MAX COOL inside air flag
47	MAX HOT A/C OFF flag	Ignition switch: ON	Display the MAX HOT A/C OFF flag
48	MAX HOT fresh flag	Ignition switch: ON	Display the AX HOT outside air flag

ACTUATOR TEST TABLE

M1554005200263

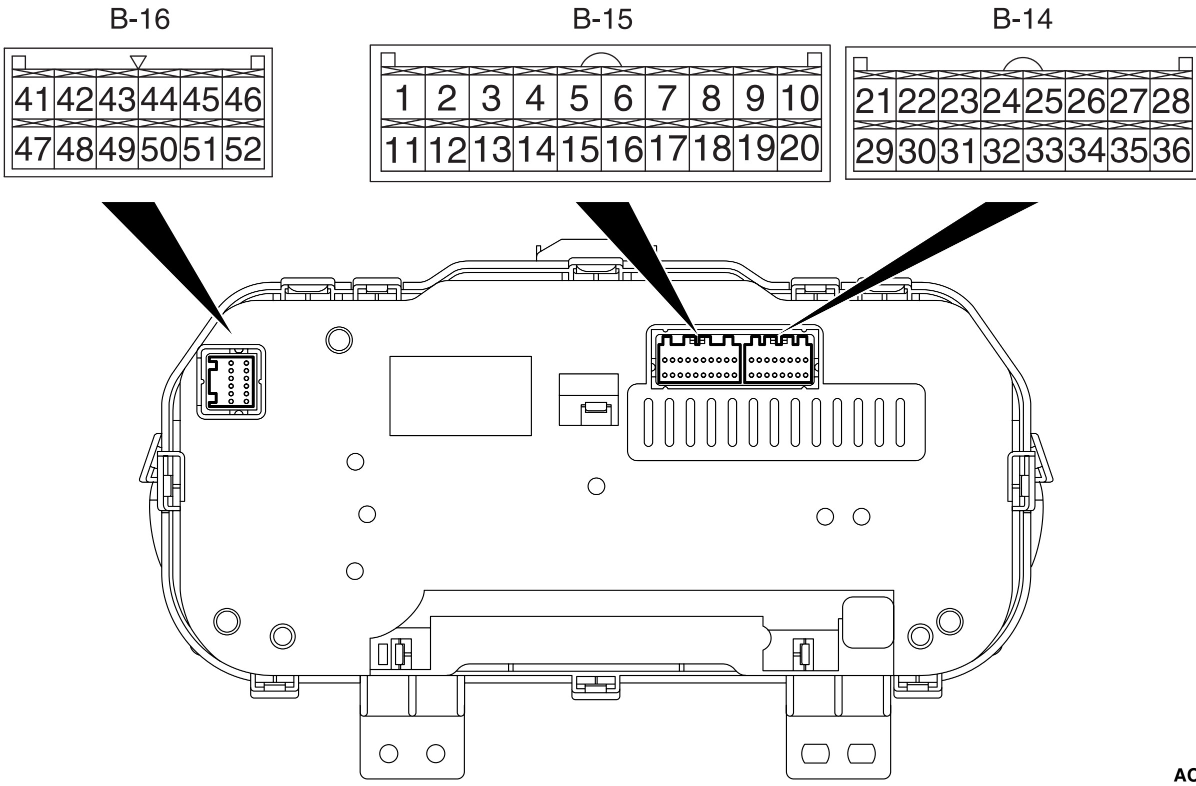
Item No.	Check items	Drive content
01	Blower motor: OFF	Stop
02	Blower motor: 8 speed	Middle speed
03	Blower motor: 16 speed	High speed
10	Air mixing damper control motor	Opening angle: Approximately 0% (MAX COOL)
11		Opening angle: Approximately 50%
12		Open angle: Approximately 100% (MAX COOL)
30	Outside/Inside air selection damper control motor	Moved to recirculation-side
31		Moved to outside air-side
40	Rear defogger switch	OFF
41		ON
09*	Condenser fan	Stop
0B*		OPERATION
50*	Idle-up requirement	OFF
51*		Low-load
52*		High-load

*NOTE: *: Drive at the engine operation*

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Group TOC

CHECK AT THE COMBINATION METER (METER AND A/C-ECU) TERMINALS

M1552010300851



AC206265AE

Terminal No.	Check items	Check conditions	Normal conditions
5	Air mixing damper control motor and potentiometer input	MAX HOT position	Approximately 4 V
		MAX COOL position	Approximately 1 V
6	Photo sensor power supply	Brightness 0 lux	4.9 – 5.1 V
		Brightness 100000 lux or more	0 V
7	Interior temperature sensor	Sensor probe temperature 25°C (4kΩ)	2.1 – 2.7 V
8	A/C pressure sensor input	Refer to P.55A-51	Refer to P.55A-51
9	Air thermo sensor	Sensor probe temperature 25°C (1.5k Ω)	2.2 V
10	Ambient temperature sensor	Sensor probe temperature 25°C (1.5k Ω)	2.2 V
11	Air mixing damper control motor (MAX HOT)	When the damper flaps is moving to the MAX COOL position.	0 V
		When the damper flaps is moving to the MAX HOT position.	System voltage
12	Blower relay input	IG2: ON	System voltage
13	Rear defogger relay	IG2: ON	System voltage
14	Photo sensor earth	Always	0 V
15	Sensor earth	Always	0 V

Terminal No.	Check items	Check conditions	Normal conditions
16	Outside/Inside air selection damper control motor	When the damper is moved to the inside air recirculation position	0 V
		When the damper is moved to the fresh air position	System voltage
17	Outside/Inside air selection damper control motor	When the damper is moved to the inside air recirculation position	System voltage
		When the damper is moved to the fresh air position	0 V
18	Air mixing damper control motor (MAX COOL)	When the damper flaps is moving to the MAX HOT position.	0 V
		When the damper flaps is moving to the MAX COOL position.	System voltage
19	Power transistor	Maximum air volume	1 V
20	Power transistor	Maximum air volume	7.5 V
29	Heater control power supply	IG2: ON	System voltage
31	Ignition switch (IG1) power supply	IG1: ON	System voltage
32	Ignition switch (IG2) power supply	IG2: ON	System voltage
33	Ignition switch (IG2) power supply	Always	System voltage
34	A/C pressure sensor earth	Always	0 V
35	Heater control earth	Always	0 V
36	earth	Always	0 V

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ON-VEHICLE SERVICE

IDLE-UP OPERATION CHECK

M1552001600832

1. Before inspection and adjustment, set vehicle in the following condition:
   - Engine coolant temperature: 80 – 90 °C
   - Lamps, electric cooling fan and accessories: Set to OFF
   - Transmission: Neutral ("N" or "P" for vehicles with A/T)
   - Steering wheel: Straightforward
2. Check whether or not the idle speed is the standard value.
   (1) Refer to GROUP 11C, On-vehicle Service – Idle Speed Check P.11C-12.

   Standard value: 750 ± 50 r/min
3. When the A/C is running after turning the A/C switch to ON, and the blower switch to the 3(MH) or 4(HI) position, check to be sure that the idle speed is at the standard value.

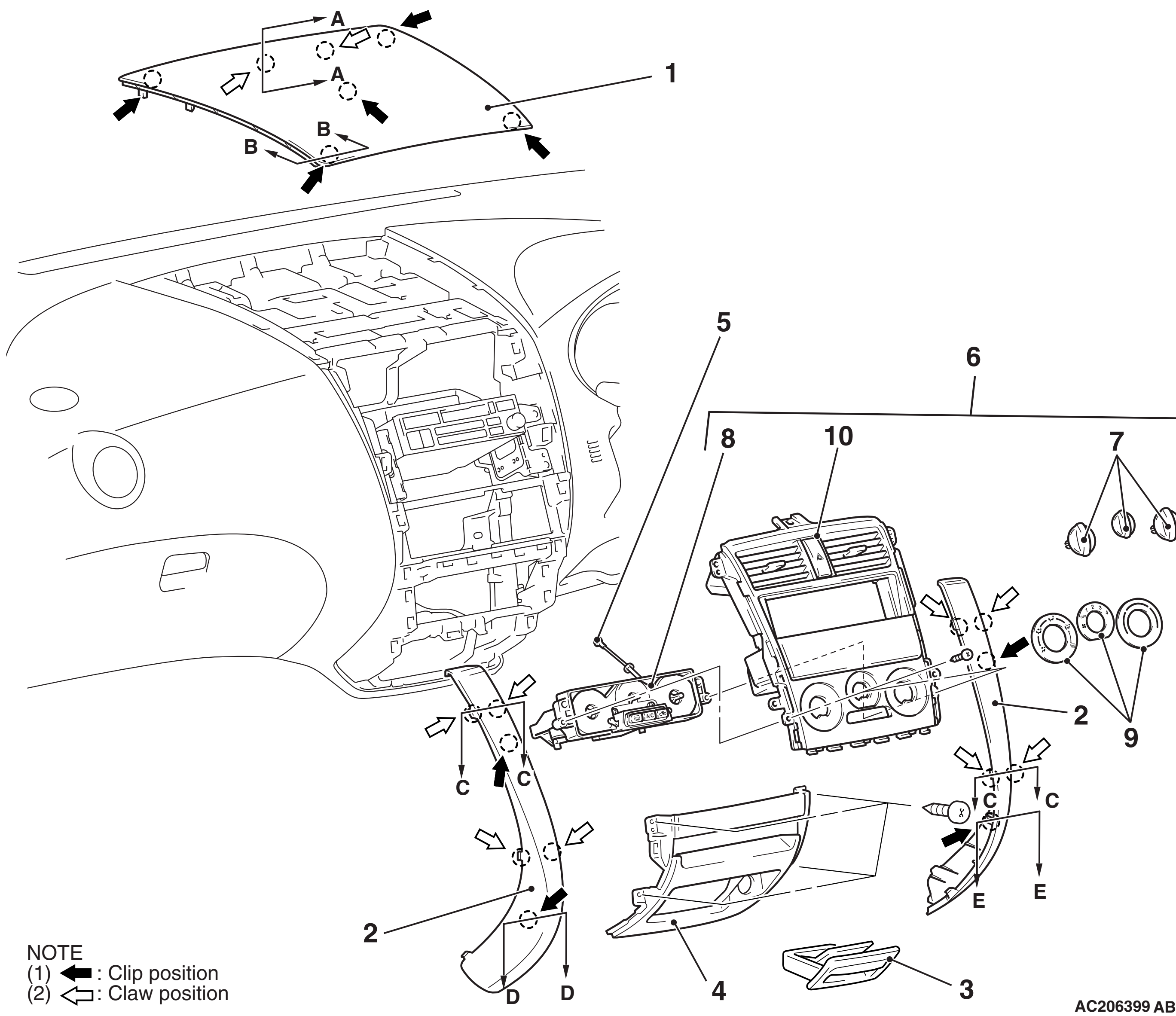
   Standard value: 850 ± 100 r/min

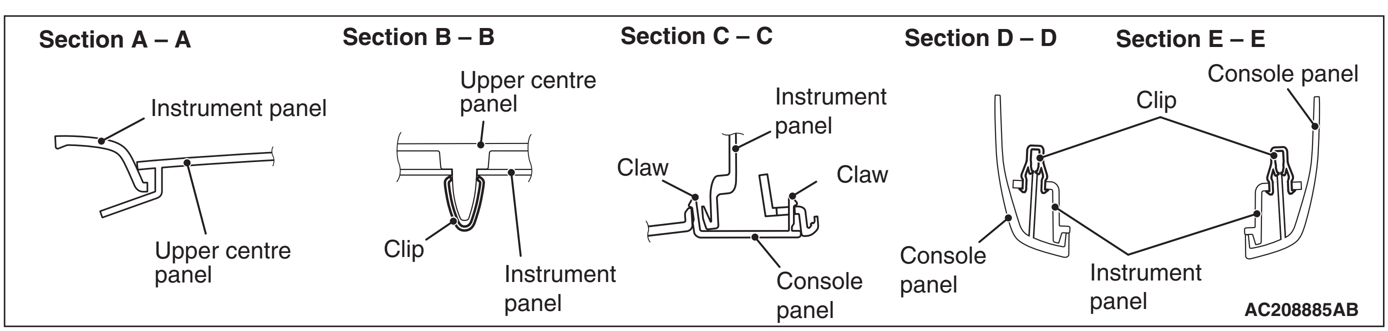
   NOTE: It is not necessary to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, a deviation from the standard value occurs for some reason, check the ISC system.

AUTOMATIC AIR CONDITIONER PANEL ASSEMBLY (A/C-ECU)

REMOVAL AND INSTALLATION

M1552002400541





Removal steps

1. Upper centre panel
2. Console panel
3. Ashtray

Removal steps (Continued)

4. Lower centre panel

>>**A**<< 5. Mode selection damper control cable connection

6. Heater control panel assembly

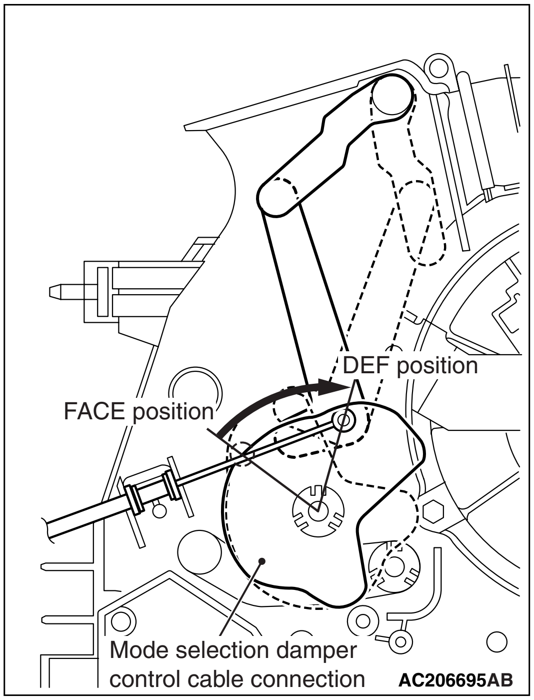
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Removal steps (Continued)

7. Knob
8. Heater control assembly
9. Mode label
10. Heater control panel

INSTALLATION SERVICE POINT

>>A<< MODE SELECTION DAMPER CONTROL CABLE CONNECTION

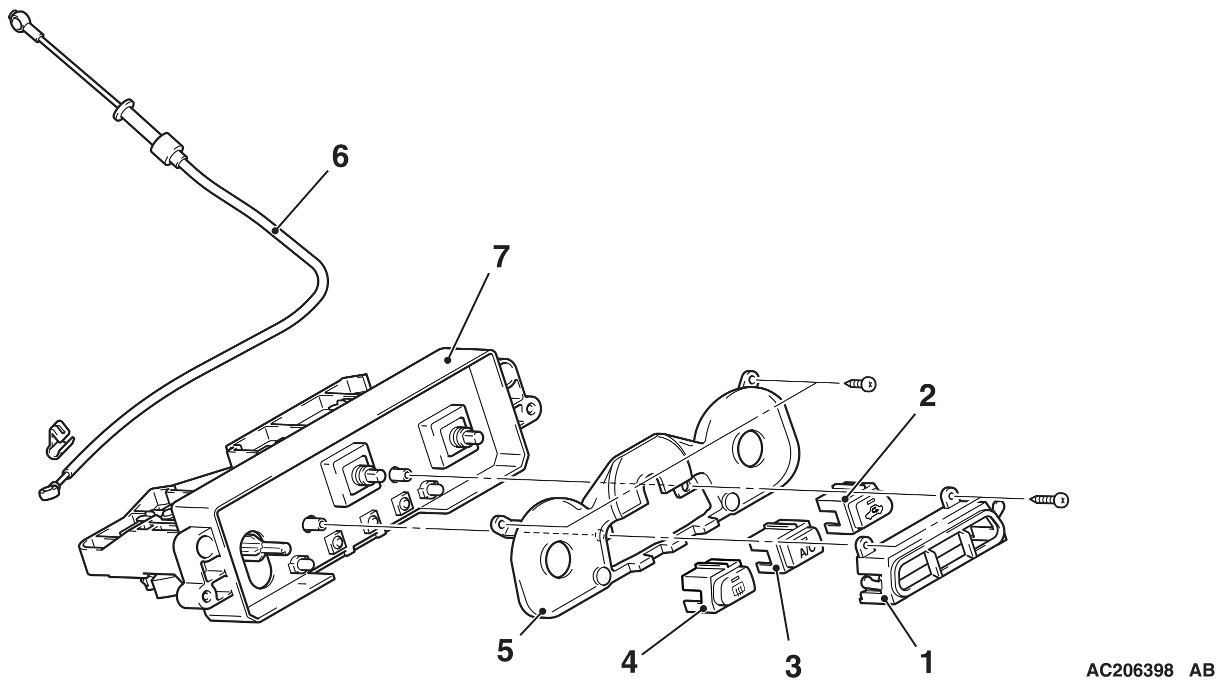


1. Set the air outlet changeover knob of the heater control assembly to DEF position.
2. Turn the air outlet changeover damper lever of heater unit to the DEF position (Turn the damper lever to the left until it stops.) and then install the cable.
3. Install the cable to the clip and fix it while aligning the case.

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DISASSEMBLY AND REASSEMBLY

M1552014200328



Disassembly steps

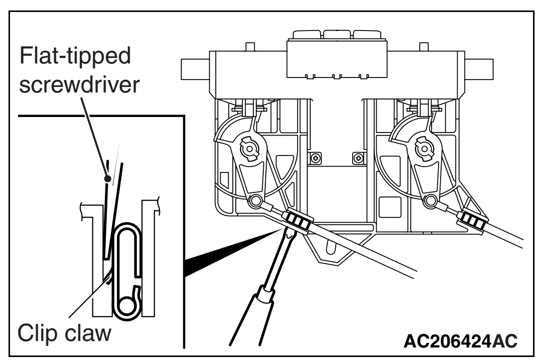
1. Switch panel
2. Outside/Inside air selection switch
3. A/C switch
4. Rear window defogger switch
5. Prism

<<**A**>> 6. Mode selection damper control cable

7. Heater control

DISASSEMBLY SERVICE POINT

<<A>> MODE SELECTION DAMPER CONTROL CABLE AND AIR MIXING DAMPER CONTROL CABLE REMOVAL



To remove the damper cable, insert the flat-tipped screwdriver from the inside of control base to the clip and remove the clip claw.

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Group TOC

HEATER UNIT

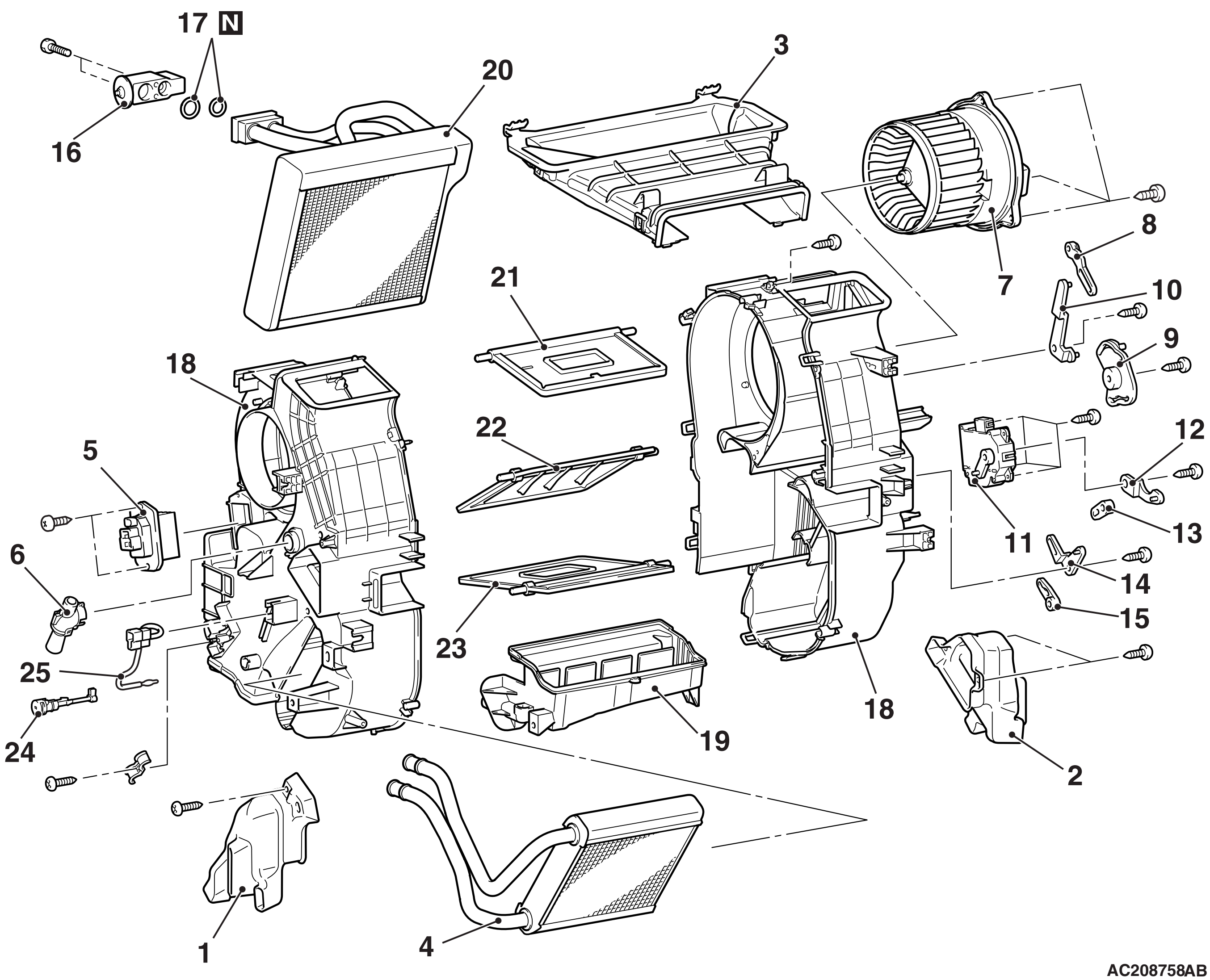
REMOVAL AND INSTALLATION

M1554009100224

The removal of heater unit is the same as it for the heater, air conditioner and ventilation. (Refer to GROUP 55A, Heater unit and cooling unit P.55A-57.)

DISASSEMBLY AND REASSEMBLY

M1551005400451



Disassembly steps

1. Foot heater duct LH
2. Foot heater duct RH
3. Heater joint duct
4. Heater core
5. Power transistor
6. Heater control vacuum aspirator
7. Blower motor
8. FACE/DEF plate
9. Mode main plate
10. FACE/DEF sub plate
11. Air mixing damper control motor and potentiometer
12. Foot sub plate
13. Foot plate

Disassembly steps (Continued)

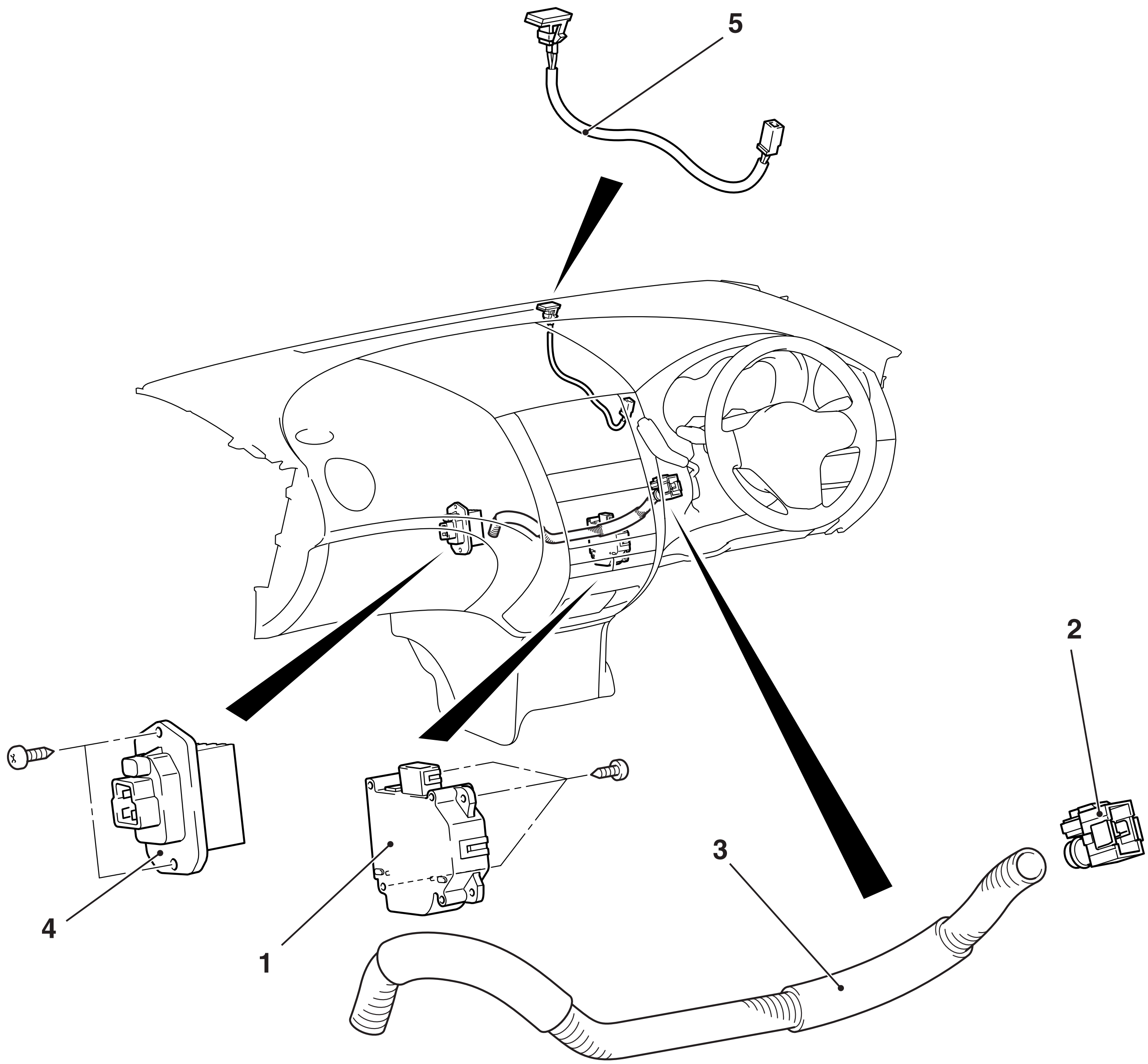
14. Air mix plate
15. Air mix main plate
16. Expansion valve
17. O ring
18. Heater case
19. Heater lower case
20. Evaporator
21. Mode selection damper control (FACE)
22. Mode selection damper (FOOT)
23. Air mixing damper
24. Air thermo sensor clip
25. Air thermo sensor

Main Index
Group TOC

SENSORS

REMOVAL AND INSTALLATION

M1554001900163



Air mixing damper control motor and potentiometer removal step

- Lower panel (Refer to GROUP 52A, Instrument Panel P.52A-3).

1. Air mixing damper control motor and potentiometer

Interior temperature sensor removal steps

- Lower panel (Refer to GROUP 52A, Instrument Panel P.52A-3).

2. Interior temperature sensor
3. Aspirator hose <<**A**>>

Power transistor removal step

- Glove box (Refer to GROUP 52A, Instrument Panel P.52A-3).
- Front scuff plate and cowl side trim (Refer to GROUP 52A, Interior Trim P.52A-11).

4. Power transistor

Photo sensor removal step

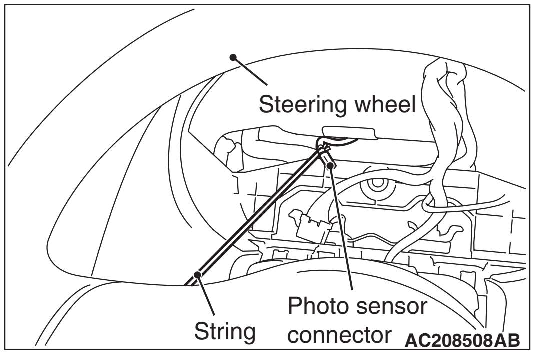
- Combination meter (Refer to GROUP 54A, Combination Meter P.54A-67).

5. Photo sensor

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Group TOC

REMOVAL SERVICE POINT

<<A>> PHOTO SENSOR REMOVAL

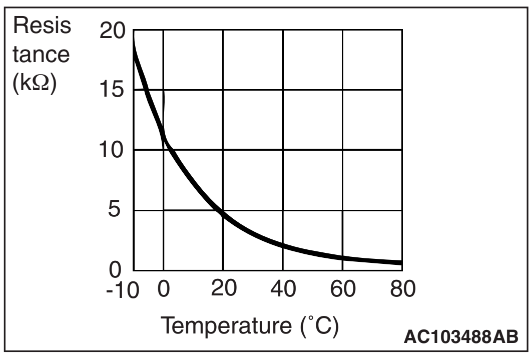


Tie the photo sensor connector with string so that the connector can be connected easily.

INSPECTION

M1554002000163

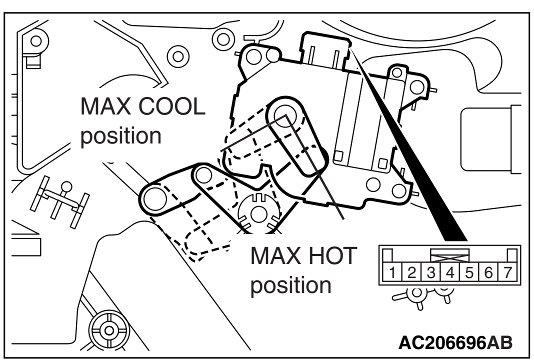
CHECK THE INTERIOR TEMPERATURE SENSOR



Check that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

NOTE: The temperature condition in checking should be within the range shown.

CHECK THE AIR MIXING DAMPER CONTROL MOTOR AND POTENTIOMETER



⚠ CAUTION

Stop energizing when the lever is set to the operation stopping position.

MOTOR CHECK

Battery connection (+) terminal	Battery connection (-) terminal	Lever operation
1	2	Rotate to the HOT side.
2	1	Rotate to the COOL side.

Potentiometer check

When the resistance value between connector terminals 3 and 5 is measured while checking the motor, check that the resistance value changes gradually within the standard value.

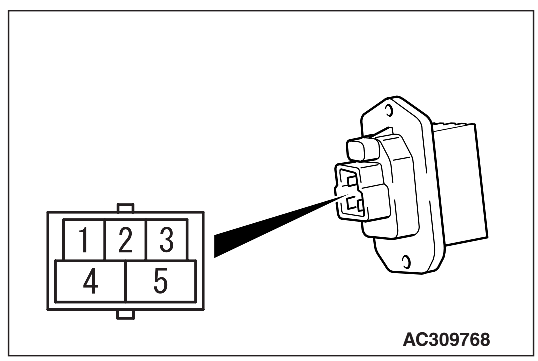
Standard value: 1.20 (MAX HOT) – 4.80 (MAX COOL) kΩ

CHECK THE PHOTO SENSER

1. Connect the M.U.T.-III, and check the data list of the photo sensor.
2. Check that the displayed value changes when the photo sensor is covered with hands.

CHECK THE POWER TRANSISTOR

Check the thermal fuse.



When the resistance between connector terminals 3 and 4 is measured, check that the resistance value is within the standard value.

Standard value: Approximately 11 kΩ

TRANSISTOR CHECK

Connect the (-) side clip of the tester to connector terminal No.4 and the (+) side clip of the tester to terminal No.5, and check that there is not a short or open circuit in the transistor.

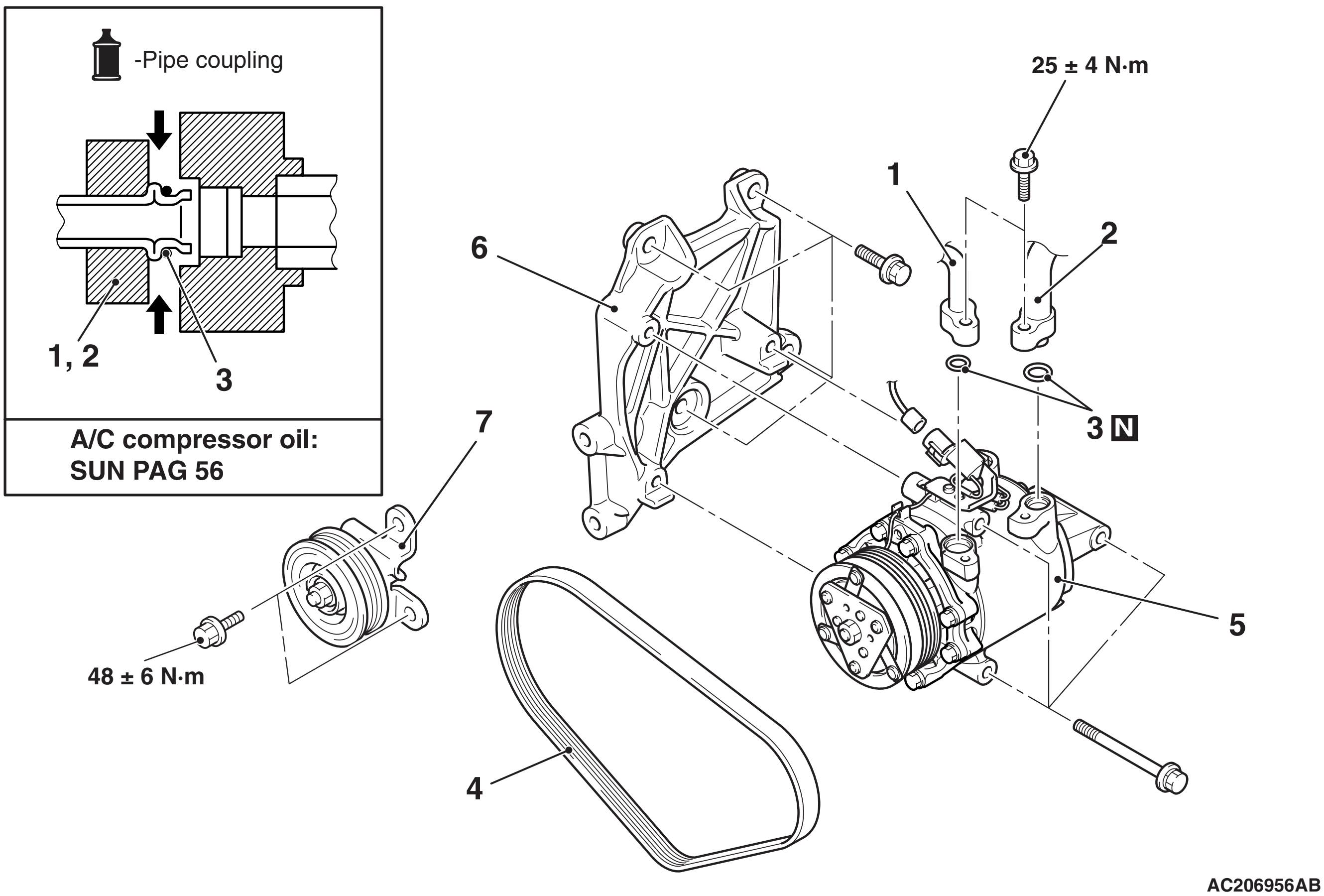
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COMPRESSOR ASSEMBLY

REMOVAL AND INSTALLATION <4G1>

M1552004400815

Pre-removal Operation	Post-installation Operation
• Refrigerant Discharging (Refer to P.55A-48.) • Front under cover panel assembly (Refer to GROUP 51, Front Bumper Assembly P.51-2 .)	• Refrigerant Charging (Refer to P.55A-48.) • Drive Belt Tension Adjustment (Refer to GROUP 11C, On-Vehicle Service, Drive Belt Tension Check And Adjustment P.11C-8.) • Front under cover panel assembly installation (Refer to GROUP 51, Front Bumper Assembly P.51-2 .)



		Removal steps
<<**A**>>	1.	Flexible suction hose connection
<<**A**>>	2.	Flexible discharge hose connection
	3.	O-ring
<<**B**>>	4.	Drive belt

		Removal steps (Continued)
<<**C**>> >>**A**<<	5.	A/C compressor assembly
	6.	A/C compressor bracket
	7.	A/C drive belt tensioner assembly

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Group TOC

REMOVAL SERVICE POINTS

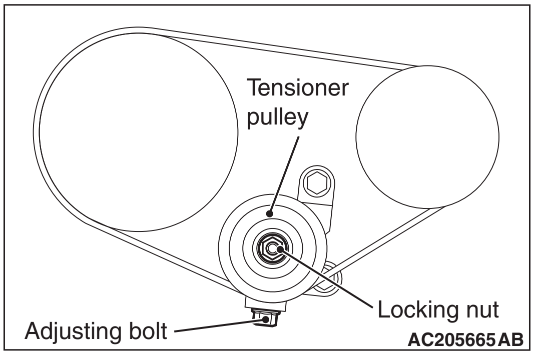
<<A>> FLEXIBLE SUCTION HOSE AND FLEXIBLE DISCHARGE HOSE DISCONNECTION

⚠ CAUTION

Use the plug which is not breathable because A/C compressor oil or receiver have high hygroscopicity.

Plug the removed nipple of the pipe, hose and expansion valve to prevent the entry of dust and dirt.

<<B>> A/C COMPRESSOR DRIVE BELT REMOVAL



1. Loosen the locking nut of the tensioner pulley

⚠ CAUTION

To reuse the drive belt, draw an arrow indicating the rotating direction (clockwise) on the back of the belt using chalk, etc.

2. Rotate the adjusting bolt to the anti-clockwise direction (to the left), and remove the drive belt.

<<C>> A/C COMPRESSOR REMOVAL

Be careful not to spill the A/C compressor oil and remove the A/C compressor.

INSTALLATION SERVICE POINT

>>A<< A/C COMPRESSOR INSTALLATION

When installing the new A/C compressor, install the A/C compressor after adjusting the oil volume as follows.

1. Measure the oil of A/C compressor removed.(X cm^3)
2. Drain the oil (Y cm^3) given by the following expression from a new A/C compressor, and then install the A/C compressor.

   $140\ cm^3 - X\ cm^3 = Y\ cm^3$

   NOTE:
   - *140 cm^3 shows the oil volume contained in the new A/C compressor.*
   - *Y cm^3 shows the oil volume stored in the refrigerant line, condenser, and cooling unit, etc.*

OTHER PARTS

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The other service procedures and components are the same as the heater and the manual air conditioner.

- On-vehicle service
- Air intake box
- Blower motor and outside/inside air selection damper control motor
- Ambient temperature sensor
- Compressor
- Condenser assembly
- Refrigerant line
- Ducts
- Ventilation